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ABSTRACT

This instructional task/competency package is designed to be used in combination with the "Industrial Arts Guide to CBE Implementation" in order to implement competency-based education in the Modern Industry course in Virginia. This task/competency package contains a suggested task sequence list, content outline, and task/competency information for the specific course in modern industry. Part 1 of this publication contains a description of the Industrial Arts program and a course description, instructional task/competency list, and content outline for the modern industry course. The task/competency list includes a minimum of tasks/competencies identified for inclusion in the course, listed in a suggested order of instruction. Part 2 contains information for instruction in each of the tasks/competencies identified in Part 1. The following information is provided for each task/competency: appropriate program and course designation, performance and enabling objectives, a criterion-referenced measure, and suggested activities and resources for instruction. Appendixes contain transparencies, handouts, and other resources for teachers to use in planning instruction on process, project, or production industries. (KC)

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Industrial Arts Instructional Tasks/Competencies for Modern Industry

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Review Draft

CBE
COMPETENCY-BASED EDUCATION

CE052024

GUIDE APPLICATION

This guide has been prepared for use in developing and selecting instructional materials and in implementing competency-based education for the following program and courses:

Program	Course
INDUSTRIAL ARTS (CIP 21.0107)	MODERN INDUSTRY VA 8462/8463

Additional information concerning the application and use of this guide in program planning and development may be obtained from:

Industrial Arts Service
Department of Education
P.O. Box 6Q
Richmond, Virginia 23216

Special recognition is given to the students of the Henrico Trade Center of the Henrico County Public Schools, Department of Vocational and Community Education. Under the supervision of William D. Burton, printing instructor, these students printed, assembled, packaged, and prepared the guide for distribution.

INDUSTRIAL ARTS

INSTRUCTIONAL TASK/COMPETENCIES

FOR

MODERN INDUSTRY

Produced by

Virginia Vocational Curriculum Center
Department of Vocational and Community Education
Henrico County Public Schools
Glen Allen, Virginia 23060

and

Old Dominion University
Norfolk, Virginia 23508

In cooperation with

Industrial Arts Education
Department of Education
Vocational and Adult Education
Richmond, Virginia 23216

FOREWORD

In the next decade, businesses and industries in Virginia will require large numbers of skilled workers. Therefore, vocational education at the secondary and postsecondary levels will have the responsibility of preparing individuals for a variety of occupations.

Competency-based education (CBE) provides the preparation students need for entry into the Virginia work force. The CBE practice of recording competencies developed by students helps them to make a smooth transition between secondary and postsecondary programs when both levels of education are required for career training. In addition, CBE is effective in retraining workers who have been displaced because of changing technology.

This guide will assist teachers and administrators in developing instructional materials that meet the needs of students and industry and comply with the Virginia CBE standards for vocational and adult education.

S. John Davis
Superintendent of Public Instruction

Melvin H. Garner
Administrative Director
Vocational and Adult Education

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INTRODUCTION

This instructional task/competency package is designed to be used in combination with the Industrial Arts Guide to CBE Implementation in order to implement competency-based education in the course Modern Industry. The implementation guide contains information pertaining to all courses within the industrial arts area; the sections of that publication are titled Career Decision-Making Information, Student Organizations (AIASA), Classroom Management Systems, and Recording Systems. This task/competency package contains suggested task sequence list, content outline, and task/competency information for the specific course in Modern Industry. Detailed instructions for combined use of these two publications are contained within the Industrial Arts Guide to CBE Implementation.

Using the Task/Competency Package

Part 1 contains a description of the Industrial Arts program and a course description, instructional task/competency list, and content outline for Modern Industry. The task/competency list includes a minimum of task/competencies identified for inclusion in the course, listed in a suggested order of instruction. The content outline corresponds with the task/competency list in content and sequencing. However, within the outline, tasks are identified in topical form and related tasks are grouped into broader topics of instruction.

Part 2 contains information for instruction in each of the task/competencies identified in Part 1. In order to facilitate referral to a desired task, the task/competencies in this part proceed in a numerical, rather than instructional, order. The following information is provided for each task/competency: appropriate program and course designation, performance and enabling objectives, a criterion-referenced measure, and suggested activities and resources for instruction.

It is suggested that the Part 1 task sequence list and course content outline be reviewed initially in order that any desired changes in sequencing of instruction be made. Once the sequencing is confirmed, lesson planning and implementation may proceed through referral to the Part 2 task/competency sheet noted beside each instructional topic within the outline.

The appendices contain transparencies, handouts, and other resources for teachers to use in planning instruction on process, project, or production industries.

PART 1

PROGRAMS AND COURSES

The course description, content outline, and suggested task sequence contained in this section were developed using the validated task analysis presented in Part 2 of this guide and other information available from Industrial Arts Education Service, Virginia Department of Education.

The course outline has been cross-referenced with the task/competency information sheets to assist the teacher in identifying instructional objectives, materials, criterion standards, and reference materials.

INDUSTRIAL ARTS

What Is Industrial Arts?

The school prepares youth for the world in which they live. Experiences are provided that uncover, develop, release, and realize individual potential.

Since the American culture is distinctly characterized as industrial and/or technological, it becomes the function of schools to give every student an insight and understanding of the technological nature of the culture. This is what the program of Industrial Arts in American schools strives to do. It acquaints persons of all ages and both sexes with all aspects of industry and technology.

Recognizing the individual's native potential for reasoning and problem solving, for imagining and creating, for constructing and expressing with materials--from which come technology and industry--Industrial Arts capitalizes on this rich potential and develops content and experiences to contribute to the growth and development of human beings commensurate with their potential. Thus, Industrial Arts is a basic and fundamental study for all persons regardless of educational goal or occupational pursuit.

Industrial Arts Can Help the Student:

* To gain an understanding of industry and technology
* To discover interests and talents
* To develop techniques in problem-solving
* To develop basic skills in the safe use of tools and machines
* To make informed and meaningful occupational choices
* To acquire interests in avocational pursuits and hobbies
* To develop safe working habits
* To apply other school subjects
* To become a wiser consumer
* To develop creativity
* To develop pride in work well done
* To work cooperatively with others.

Mission of Industrial Arts Education

The mission of Industrial Arts Education is to assist each student to develop understanding about all aspects of industry and technology, and to aid in the discovery and development of individual potential.

Goals

Industrial Arts has established goals to provide the following skills and concepts for students, consistent with their abilities, interests, and educational needs:

1. Students at the elementary school level will receive learning reinforcement through the use of simple tools, materials, and processes that contributes to personal development and technological awareness.
2. Students at the middle or junior high school level will be made aware of employment and/or self-employment opportunities and requirements useful in making career choices and in determining their educational programs.
3. Students at the senior high school level will acquire competencies that lead to responsible citizenship through technological understanding, consumer knowledge, and the productive use of leisure time.
4. Students at the senior high school level will acquire technical competencies in preparation of advanced vocational or technical education programs.
5. Students participating in the Industrial Arts student organization (AIASA) will develop leadership abilities and will exhibit pride in work well done, high standards of craft quality, scholarship, and safety.

Continuing Instructional Objectives

The Industrial Arts program stresses the following instructional objectives:

1. To develop in each student an insight and understanding of technology and industry and their place in our society and the free enterprise system.
2. To discover and develop individual talents, attitudes, interests, and potentials as related to industry and technology.
3. To develop technical problem-solving skills related to materials and processes.
4. To develop in each student basic skills in the safe use of the common tools and machines.

OVERVIEW OF INDUSTRIAL ARTS EDUCATION PROGRAMS[1]

The Industrial Arts Education offerings are provided to assist the student in developing an understanding about industry and technology and in the discovery and development of individual potential. There are two types of industrial arts programs designed for the secondary school level:

1. Orientation and Exploration--designed for grades 7 through 9, this program assists students in making informed and meaningful occupational and educational choices. The program designed for the middle or junior high school provides the student with a broad base of try-out experiences and insights into career opportunities. It gives a basis for personal assessment of work interests and aptitudes. Instruction at this level places emphasis upon the following:

   a. Using the tools, equipment, materials, and products associated with industry and technology

   b. Role playing in simulated enterprises associated with a number of the career clusters

   c. Studying and analyzing the materials, products, processes, problems, uses, developments, and contributions of many of the elements making up career clusters

   d. Studying the organization of numerous industries or businesses while experiencing typical aspects of many

   e. Researching, planning, designing, constructing, evaluating, and generalizing in association with problems and projects related to various career clusters.

2. Technical Adaptability--designed for grades 9 through 12, this program prepares students for vocational and technical career decisions. The senior high school program provides students with competencies which will result in an occupational readiness and responsible citizenship useful for the future craftsperson, technician, engineer, or consumer. It provides a foundation for career preparation either at the secondary or postsecondary level. The senior high program complements the middle or junior high school offering by completing a sequence of opportunities to learn about the industrial and technological aspects of society. Instruction in the program places emphasis upon the following:

   a. Preparing for enrollment in advanced technical or occupational programs

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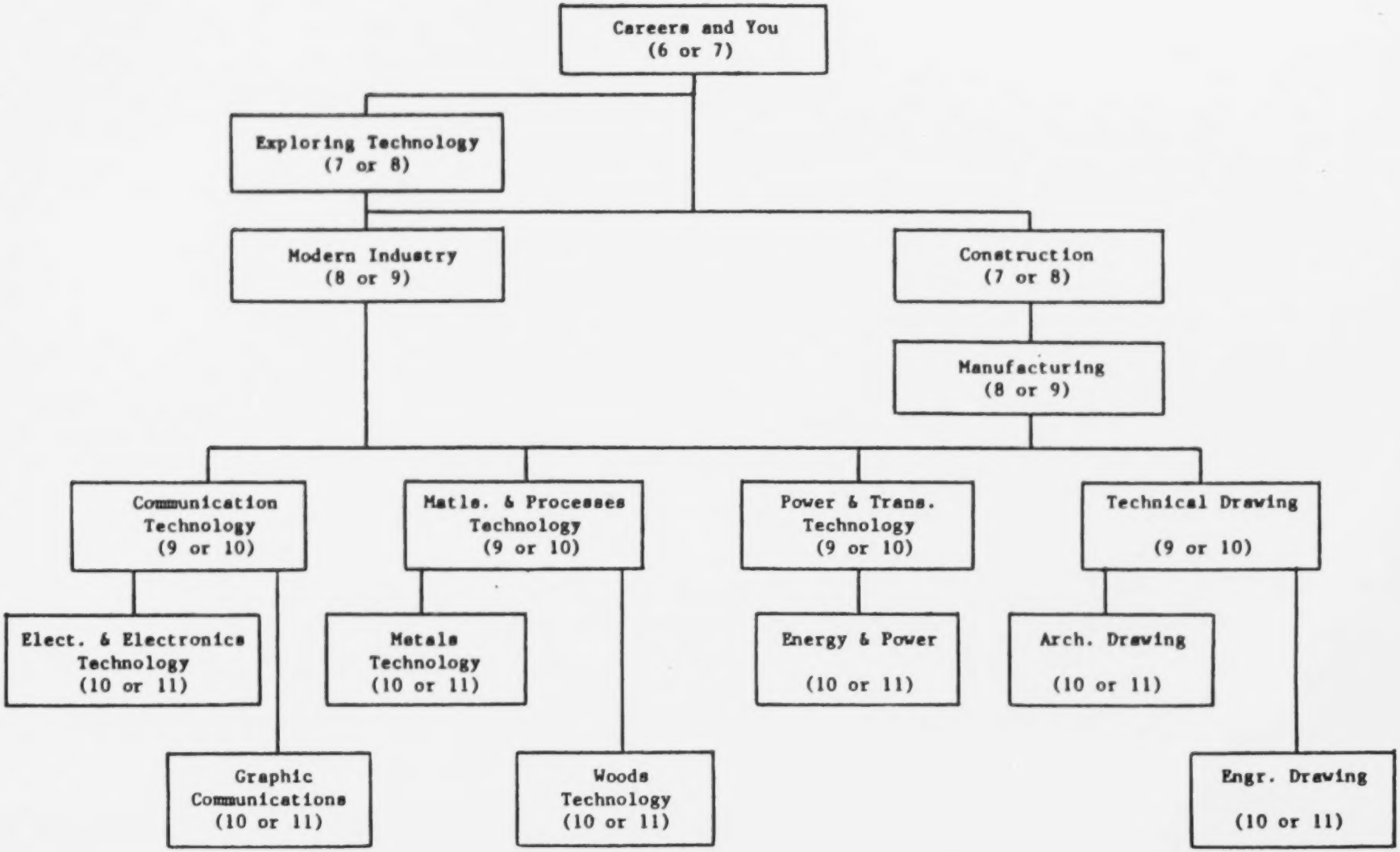
[1] Division of Program Services and Division of Administrative Services and Continuing Education, Vocational Education Student Planning Guide (Richmond: Virginia Department of Education).

SUGGESTED SEQUENCES OF OFFERINGS
INDUSTRIAL ARTS EDUCATION



b. Understanding industry and technology and their place in society and the free enterprise system

c. Understanding industrial processes and the practical application of scientific principles

d. Developing basic skills in the proper use of common industrial tools, materials, and processes

e. Solving problems creatively, using the materials, processes, and products of industry.

Activities of the American Industrial Arts Student Association (AIASA) are included as a part of the instructional program to promote leadership qualities, high standards of work performance, scholarship, and safety. Teachers integrate AIASA experiences within their instruction by providing students with the following:

a. An involvement with the community's industrial and technical resources

b. Activities in parliamentary procedures and democratic decision-making

c. Recognition for exemplary performance, work skills, and safety procedures.

THE INDUSTRIAL ARTS CURRICULUM

LEVEL	GOAL	PROGRAM
Elementary School	Learning Reinforcement	Industrial Arts activities integrated within the elementary curriculum
Middle or Junior High School	Orientation and Exploration	Exploring Technology Modern Industry Construction Manufacturing
High School	Technical Adaptability	Phase I Basic Technical Drawing Communication Technology Materials and Processes Technology Power and Transportation Technology Phase II Architectural Drawing Electricity and Electronics Technology Energy and Power Engineering Drawing Graphic Communications Metals Technology Woods Technology

INDUSTRIAL ARTS EDUCATION PROGRAMS

PROGRAMS	AVAILABLE COURSES	CODE	SUGGESTED GRADE	NO. WEEKS
Occupational Orientation (Pre-Exploratory)	A World of Choice: Careers and You	8475	6 or 7	36 or 18
Orientation and Exploration	Exploring Technology (18 or 36 weeks)	8464	7, 8, or 9	18
		8461	7, 8, or 9	36
	Modern Industry (18 or 36 weeks)	8463	7, 8, or 9	18
		8462	7, 8, or 9	36
	Construction (18 or 36 weeks)	8432	7, 8, or 9	18
		8431	7, 8, or 9	36
	Manufacturing (18 or 36 weeks)	8426	7, 8, or 9	18
		8425	7, 8, or 9	36
Technical Adaptability (Phase One)	Communication Technology	8415	9 or 10	36
	Materials and Processes Technology	8433	9 or 10	36
	Power and Transportation Technology	8445	9 or 10	36
	Basic Technical Drawing	8435	9 or 10	36
(Phase Two)	Architectural Drawing	8437	10-12	36
	Electricity and Electronics Technology	8416	10-12	36
	Energy and Power	8448	10-12	36
	Engineering Drawing	8436	10-12	36
	Graphic Communications	8458	10-12	36
	Metals Technology	8439	10-12	36
	Woods Technology	8449	10-12	36
Alternative (Vocational Centers)	Industrial Occupational Exploration (ICE)	8472	9 or 10	36

SECONDARY PROGRAMS AND COURSES

PROGRAM TITLE: ORIENTATION AND EXPLORATION

DESCRIPTION: The program designed for the middle or junior high school provides the student with a broad base of try-out experiences and insights into career opportunities. It gives a basis for personal assessment of work interests and aptitudes. Instruction at this level places emphasis upon the following:

- Using the tools, equipment, materials, and products associated with industry and technology
- Role-playing in simulated enterprises associated with a number of the career clusters
- Studying and analyzing the materials, products, processes, problems, uses, developments, and contributions of many of the elements making up career clusters
- Studying the organization of numerous industries or businesses while experiencing typical aspects of many
- Researching, planning, designing, constructing, evaluating and generalizing in association with problems and projects related to various career clusters.

CIP CODE: 21.0107

SUGGESTED GRADE LEVEL: 6, 7, 8, or 9

APPROVED COURSE	VA COURSE CODE	DOT CODE/TITLE
Modern Industry	8462 (36 weeks) 8463 (18 weeks)	N/A

MODERN INDUSTRY (8462, 8463)

COURSE DESCRIPTION: Students construct group projects to learn about two major types of industries: (1) the processes industry, which converts raw materials into more useful forms; and (2) the production industry, which uses the assembly line. Students organize and run their own industry. The products or projects are made for personal use, to sell, or to display.

PREREQUISITES: None

GRADE LEVEL: 8 or 9

TASK/COMPETENCY SEQUENCE

PROCESS/PROJECT INDUSTRIES

1.1 Describe the group process/project approach to the study of contemporary industry
1.2 Participate in an organized personnel system to manage class and laboratory activities
2.1 Describe process- and project-type industries
2.2 Establish criteria for industry selection
2.3 Select a contemporary industry to study
2.4 Select community resources for process/project industry information
3.1 List position titles for personnel organization and describe duties
3.2 Construct organization charts
3.3 Select roles to be played in the study of a contemporary industry
3.4 Role-play occupations in a selected contemporary industry
4.1 Complete preliminary project planning
4.2 Prepare working drawings
4.3 Select and use appropriate tools and machines
4.4 Assemble industry displays
5.1 Prepare written reports to present orally during progress and final seminars
5.2 Assemble a group publication about an industry studied
5.3 Prepare a public exhibit of contemporary industry
5.4 Describe the effects that contemporary industry has had on people and societies
5.5 Follow rules for participation in competitive events

LINE PRODUCTION INDUSTRIES

6.1 Describe the line-production approach to the study of contemporary industry
6.2 Participate in the selection of officers to manage class and enterprise production
7.1 Establish criteria for the selection of a product
7.2 Select product for line production
8.1 Establish an enterprise
8.2 Identify personnel organization chart for an enterprise
8.4 Apply for personnel positions in this line-production industry
8.5 Participate as an employee in a line-production industry
8.6 Plan for the line production of a product
9.1 Design a line-production product

9.2 Tool up for the line production of a product
9.3 Produce line-production products
9.5 Liquidate an enterprise
10.1 Prepare written and oral presentations on line-production activities
10.2 Assemble a display on line-production activities
10.3 Compile report of line-production company
10.4 Describe the effects that line-production industries have had on people and societies
10.5 Participate with other students in competitive events

Note 1: The task/competencies listed above are the minimum for an 18-week course. In a 36-week course, the cycle for process/project industries and/or the cycle for line-production industries should be repeated, presenting additional industries for student selection and study.

Note 2: Since student involvement is so important in the selection and management of these two group studies of Modern Industry, the teacher may allow the students to begin the course with line production (Task/Competencies 6.1-10.5). Likewise, Task/Competencies 2.1-5.5 could be repeated if students were to select another type of process or project industry to study after line production.

COURSE CONTENT

	Content Outline	Task/Competency Code
I.	Introduction to Modern Industry	
	A. Class or group studies	1.1
	B. Personnel and management systems	1.2
II.	Selection of an Industry for Group Study	
	A. Process- and project-type industries	2.1
	B. Criteria for industry selection	2.2
	C. Class selection of industry	2.3
	D. Community resources	2.4
III.	Organization of Class Personnel	
	A. Positions needed	3.1
	B. Organizational charts	3.2
	C. Hiring of personnel	3.3
	D. Work assignment	3.4
IV.	Construction Activities	
	A. Preliminary project plans	4.1
	B. Working drawings	4.2
	C. Tool and machine safety	4.3
	D. Display construction	4.4
V.	Report Activities	
	A. Written reports	5.1
	B. Publication of company report	5.2
	C. Exhibit preparation	5.3
	D. Benefits of industry	5.4
	E. Modern Industry Contest	5.5
VI.	Introduction to Line Production	
	A. Line-production activities	6.1
	B. Class personnel system	6.2
	Production Products	
	A. Criteria for product selection	7.1
	B. Product selection	7.2
VIII.	Management Activities	
	A. Company or enterprise organization	8.1
	B. Personnel needs	8.2
	C. Organizational chart	8.3
	D. Hiring of personnel	8.4
	E. Work assignment	8.5
	F. Production plans	8.6
IX.	Engineering and Production	
	A. Product design	9.1
	B. Production tooling	9.2
	C. Production of product	9.3
	D. Distribution of product	9.4
	E. Liquidation of company	9.5

Course Content--Modern Industry

Content Outline		Task/Competency Code
X.	Presentation of Information About Industry	
A.	Written and oral reports	10.1
B.	Line-production display	10.2
C.	Company report	10.3
D.	Benefits of production industry	10.4
E.	American Enterprise Contest	10.5

Note: Since student involvement is so important in the selection and management of these two group studies of Modern Industry, the teacher may allow the students to begin the course with line production, Outline VI to X. Likewise, Outline II to V could be repeated if students were to select another type of process or project industry to study after line production.

THE GROUP PROJECT APPROACH

The Group Project

The group project is an in-depth study of a single industry. It is the study of an industry in the broadest possible sense and attempts to account for all of the industry's major characteristics. The group project uses student involvement, interaction, and skills to produce one or more tangible products depicting the industry studied. Resources and materials for the study are secured through research and communicated to the group participants through the use of seminar techniques and a summary production report. Most of these activities are used in a concurrent manner through role-playing on the part of the participants to demonstrate the interrelationships of the industry studied.

The group project has a considerable contribution to make toward the development of an individual in terms of social adjustment and responsibilities, economic self-sufficiency, self-renewal, mobility, leadership and "followership" abilities, problem-solving abilities, ability to adapt to a changing technological environment, and social, economic, and political sophistication. In order for an individual to relate well to the industrial-technical environment, he or she should have an understanding of how the total industry functions rather than a few specific skills or points of information which may or may not be related to personal life needs within that environment.

Characteristics of the Group Project

The student is afforded experiences that provide for the following:

(a) Becoming involved in an in-depth study of a raw materials processing and/or project industry
(b) Developing a project industry-oriented contract
(c) Organizing and using an organization of personnel to accomplish tasks
(d) Experiencing the development and processing of a product
(e) Developing a management-oriented structure
(f) Using tools, skills, materials, processes, procedures, and research techniques in a coordinated manner to produce a display or exhibit depicting in detail the main aspects of the industry being studied
(g) Participating in a seminar to share and disseminate information and ideas about the organization, coordination, and production realized through contemporary industry.
(h) Surveying career opportunities in contemporary industries.

Selection of a Contemporary Industry

The following factors should be considered when selecting an industry:

(a) The importance of industry to society
(b) The ability to portray the industry in construction activity
(c) The challenge that the industry would give to investigation and problem-solving
(d) The availability of materials, resources, field trips, and information
(e) The interests and attitudes of the group as a whole about studying the industry
(f) The ability to study the industry in depth, not just a small part
(g) The social acceptance of the industry
(h) The ability to use tools and materials in simulating the processes of the industry
(i) The availability of time, space, and money to complete the project.

Ideas for Possible First Process or Project Industry to Be Studied by Group/Class

This list of industries is not to be considered complete. Each day new processes and innovations are being developed. Students should understand that a process industry will produce a large quantity of materials or products. Project industries usually build one or two products at a time. As an example: The chemical processing industry is located in a plant which was built by a construction project industry. A radio station will process or transmit information through a tower built by construction project contractor.

Agriculture
- Dairy products
- Canning

Mining and Refining
- Coal
- Oil
- Natural gas

Materials
- Metals:
- Ferrous--
  - Iron
  - Steel
- Nonferrous--
  - Aluminum
  - Copper
  - Lead
  - Tin
  - Zinc
- Plastics:
  - Thermoset
- Thermoplastics:
  - Rubber
- Cement:
  - Concrete
- Chemicals:
  - Paint
  - Varnish
  - Lacquer
- Wood Products:
  - Lumbering
  - Paper
  - Plywood
  - Particle board
  - Chemical by-products
- Ceramics:
  - Glass
  - Refractories
  - Abrasives
  - Clay
  - Pottery
- Leather:
  - Footwear
  - Clothing
- Building:
  - Brick
  - Concrete block
  - Structural steel
  - Concrete
  - Pipe--copper, galvanized
- Textiles:
  - Cloth
  - Thread
  - Synthetics
- Minerals:
  - Gravel
  - Jewelry
  - Sand

Communications
- Computers
- Electronics
- Televisions
- Radios
- Stereos
- Tape players
- Recorders
- Video discs
- Silicone chips
- Satellites

Construction
- Roads
- Bridges
- Towers
- Dams
- Buildings
- Houses
- Apartment complexes
- Shopping centers
- Hospitals
- Power plants
- Domed stadiums
- Subways

Packaging
- Cardboard
- Plastic
- Paper
- Glass

Manufactured Goods
- Textiles
- Foundry
- Machine tools
- Office equipment
- Electrical equipment

Power
- Electrical
- Water
- Nuclear
- Chemical

Transportation
- Air:
  - Airplanes
  - Balloons
  - Blimps
- Land:
  - Automobiles
  - Trucks
  - Trains
  - Bicycles
  - Monorails
- Sea:
  - Ships
  - Submarines
  - Aircraft carriers
- Space:
  - Satellites
  - Space Shuttle
  - Skylab
  - Apollo
  - Apollo-Soyuz
  - Saturn V
  - Gemini
  - Mercury

THE LINE-PRODUCTION APPROACH

The line-production approach is designed to acquaint students with the ways in which contemporary industry organizes personnel, materials, and machines into a common endeavor; the study of occupations related to the areas of management and labor within industry; and the study of the method in which machines and materials are used by the industry in preparation and production of commodities in large quantities, as typified by the mass-production industries.

The study of industry in any industrial arts program should be a major goal that is instigated and managed by the teacher for the purpose of involving students in learning activities to meet their individual needs and interests. This can be accomplished by involving students in developing a company and participating in a line production, which will offer the student the opportunities to learn through real living experiences.

Living-Learning Involvement Activities

Problem-solving	Training
Organizing	Negotiating
Producing	Role-Playing
Marketing	Analyzing
Designing	

Characteristics of Line Production

The students are afforded experiences that provide for the following:

(a) Formulating a functional line and staff personnel plan
(b) Solving problems of people, technology, and industry through an industrial organization
(c) Realizing concepts of the free enterprise system
(d) Training and retraining of student personnel to meet the occupational needs of the student-organized industry
(e) Negotiating the solution of labor-management problems
(f) Examining career opportunities and exploring skill development in production technology
(g) Using tools, skills, materials, processes, procedures, and research techniques through a production industry organization to produce a salable product
(h) Making decisions democratically within their organization
(i) Learning the values of marketing and merchandising
(j) Solving problems analytically.

Selection of a Product

(a) Select a useful product.
(b) Design a product which is pleasing to the eye, with aesthetic value.
(c) Determine that the product will sell, or is marketable.
(d) Assess whether equipment in the industrial arts laboratory is suitable for building the product.

(e) Select a product which can be made by line-production methods.
(f) Locate materials available to ascertain that cost is not prohibitive.
(g) Purchase parts which cannot be made.
(h) Keep number of parts to be made in proportion to personnel available to build them.
(i) Consider the abilities of students and time available to make product.
(j) Allow students to express interest in production and completion of product.
(k) Determine that patent infrigements are not involved.

Ideas for Possible Products for Line Production by Group or Class

This list is not complete. Students will want to suggest products needed for recreation, home, or school. Consider products to raise money for AIASA activities or to donate to worthy cause in school or community, in accordance with local school policy.

Recreational Products

Jump-a-Peg game
Marble Drop game
Gumball machine
Whistle
Tool box
Cassette case
Folding chair
Transistor radio
Printed products
Silk-screen T-shirts
Screen-process printed mirrors
Toys for children

Home-Related Products

Salt and pepper shakers
Paper towel stand
Plant stand
Book rack
Coaster set
Desk lamp
Circuit tester
Trouble light
Dresser caddy

School-Related Products

Book shelf or rack
T. V. stand
Signs
Desk-top file
Name plates
Plaques
Hall passes
Spirit items
Buttons, Ribbons
Award trophies

PART 2

TASK INVENTORY

One of the major characteristics of competency-based education (CBE) is that the course content is based upon actual jobs or tasks performed by persons living and working in the technological world. In Virginia, the Department of Education has established standards for competency-based education. According to these standards, competencies must be "role-relevant" and based upon "appropriate research." This standard states:

> Role-relevant competencies that include standards are identified and stated.
>
> The competencies with standards will be identified through V-TECS, IDECC, and other appropriate research. Advisory committees should be used to review competencies and standards. Competencies in the affective domain will be included. Role-relevant competencies for occupational preparation programs are those that specifically relate to the occupation for which the student is being prepared as well as to the personal needs of the student. Role-relevant competencies are related also to orientation, exploration, or industrial arts experiences which have been identified for students.

Therefore "role-relevant" jobs or tasks, called competencies in CBE, must be identified and validated before instructional materials are developed and subsequent instruction can take place.

The task list contained in this instructional guide was based on the following:

1. The Virginia Industrial Arts Education Competency Catalog for Modern Industry
2. The review and selection of appropriate competency-based materials
3. Input from industrial arts teachers and curriculum specialists.

Based upon the information collected and reviewed from the available sources indicated, a task inventory was prepared.

The next major step involved in the development of the task inventory was validation of the task list. Validation is essential if the information collected is to be

useful in operating CBE courses and programs. The validation process involved the following:

1. Review by writing-team members to determine completeness of the inventory.
2. Review and validation by state consultants to ensure the role-relevance and completeness of the inventory.
3. Review by local industrial arts teachers to determine the validity of the inventory.
4. Final review and editing by writing-team members, project directors, and state staff.

The task list included in this publication was based on current available resources and validated by teachers, advisory committee members, and persons employed in industrial arts. Regional and local tasks were included in the inventory; therefore, individual tasks may or may not be applicable for a given locality. It is essential that all instruction be based on the validated task analyses included in this resource.

The task list has not been arranged in order of difficulty of tasks or instructional sequence because of the variety of courses and programs offered throughout the state. Sequencing has been shown in the sample course outlines in Part 1 of this package.

TASK INVENTORY FOR

MODERN INDUSTRY

CONTENT/CONCEPT AREAS

1. Introducing the Processing and Project Industries
2. Selecting a Process or Project Industry
3. Organizing Personnel into a Management System
4. Constructing a Display or Exhibit of Industry
5. Communicating Information Through Seminars, Reports, and Displays
6. Introducing Line-Production Industries
7. Determining Product for Production
8. Managing the Enterprise and Personnel
9. Engineering and Producing the Product
10. Presenting Information through Seminars, Reports, and Displays

Note: Since student involvement is so important in the selection and management of these two group studies of Modern Industry, the teacher may allow the students to begin the course with line production (Content/Concepts 6-10). Likewise, Content/Concepts 2-6 could be repeated if students were to select another type of process or project industry to study after line production.

CONTENT/CONCEPT

1. INTRODUCING THE PROCESSING AND PROJECT INDUSTRIES

TASKS/COMPETENCIES

1.1 Describe the group process/project approach to the study of contemporary industry

1.2 Participate in an organized personnel system to manage class and laboratory activities

Application

CONTENT/CONCEPT

1. INTRODUCING THE PROCESSING AND PROJECT INDUSTRIES

PROGRAM

INDUSTRIAL ARTS (21.0107)

TASK/COMPETENCY

1.1 Describe the group process/project approach to the study of contemporary industry

COURSE

Modern Industry (8462/8463)

1.1

PERFORMANCE OBJECTIVE

P1.1 Given a visual presentation by the teacher, describe the group process/project approach to the study of contemporary industry by listing with 100% accuracy examples of industries which process materials or information and industries which produce a single project.

SELECTED ENABLING OBJECTIVES

E1.1.1 Prepare notebook for study of contemporary industry.

E1.1.2 Outline general classroom/laboratory safety procedures.

E1.1.3 Explain the meaning of industrial arts and its general activities.

E1.1.4 Explain the meaning of the term industry.

E1.1.5 Trace the development of industrial production.

E1.1.6 List the types of industries of the local region and their products.

E1.1.7 Differentiate between process and project industries.

E1.1.8 Participate in selection and study of various contemporary industries.

CRITERION-REFERENCED MEASURE

C1.1 Description of group process/project approach by listing with 100% accuracy examples of process and project industries

SELECTED INSTRUCTIONAL ACTIVITIES

1. Have students complete necessary forms and place copies in notebook (E1.1.1).
2. Have students take home permission sheets to be signed by parents (E1.1.2).
3. Have students take examination on classroom/laboratory safety (E1.1.2).
4. Conduct a class discussion on the Industrial Arts and the Modern Industry programs (E1.1.3, E1.1.4, E1.1.7).
5. Show the films, It's Better to Be Safe Than Sorry and From Beginning to End (E1.1.2, E1.1.3).
6. Have students bring to class a list of past and present industries located in their local region (E1.1.5, E1.1.6).
7. Help students form groups to study selected contemporary industries (E1.1.8).

SELECTED TOOLS AND MATERIALS

Samples of past group and line-production activities

Slide and overhead projectors

Videotape player and monitor

SELECTED AUDIOVISUAL MATERIALS

Slides of local industries (instructor-provided)

Transparencies: Appropriate transparencies on group process/project industries (Appendix B)

Videotapes: Industrial Arts for the 70s, Program 2, It's Better to be Safe Than Sorry (27290). Audiovisual Services.
Industrial Arts for the 70s, Program 13, From Beginning to End (30890). Audiovisual Services.

SELECTED REFERENCES

The Development of Industry. The Industrial Education Instructional Materials Development Project.
The Evolution of Industry. Stout.
The Industrial Arts Teacher's Handbook. Maley.
Industry Today. Stout.
Manufacturing. Fales, et al.
The Maryland Plan. Maley.

Application

CONTENT/CONCEPT

1. INTRODUCING THE PROCESSING PROJECT INDUSTRIES

PROGRAM

INDUSTRIAL ARTS (21.0107)

TASK/COMPETENCY

1.2 Participate in an organized personnel system to manage class and laboratory activities

COURSE

Modern Industry (8462/8463)

1.2

PERFORMANCE OBJECTIVE

P1.2 Given the list of in-class officer and committee positions and the duties of each, participate in an organized personnel system to manage classroom and laboratory activities effectively. Individual participation will be evaluated on an ongoing basis and must be rated acceptable according to guidelines given in class.

SELECTED ENABLING OBJECTIVES

E1.2.1 Explain the need for people to have organizations.

E1.2.2 List examples of school, community, and industry organizations.

E1.2.3 Outline duties of officers and committees.

E1.2.4 Apply for a position in the personnel system.

E1.2.5 Vote for fellow students to hold positions in the in-class personnel system.

E1.2.6 Follow in-class agenda to conduct meetings.

E1.2.7 Manage classroom and laboratory activities with teacher.

CRITERION-REFERENCED MEASURE

C1.2 Individual participation in personnel system, rated acceptable according to guidelines provided

SELECTED INSTRUCTIONAL ACTIVITIES

1. Introduce students to the American Industrial Arts Student Associateion through literature and slides (E1.2.1).

2. Present lesson on organizations and personnel systems from AISA Guide 2 (E1.2.2, E1.2.3).

3. Distribute and discuss a listing of the duties of officers and committees in personnel system (E1.2.4).

4. Have secretary record position of each student in the in-class personnel system (E1.2.5).

5. Show film or filmstrip on meeting procedures (E1.2.5).

6. Explain organizational chart in which each leader and committee are identified (E1.2.7).

SELECTED TOOLS AND MATERIALS

Flag, Banner, and Gavel
Officer symbols on table in front of class area
Slide projector
Movie projector
Handout: List of officer and committee duties (instructor-provided)

SELECTED AUDIOVISUAL MATERIALS

Film: Art of Communication--How to Conduct a Meeting (21908). Audiovisual Services.

Slides: AIASA: A Classroom Experience. National AIASA.
Move with Tomorrow. Industrial Arts Education Service.
Organizing the Industrial Arts Student Association. Industrial Arts Education Service.

SELECTED REFERENCES

Organizing the Industrial Arts Student Association, Guide 1. Virginia Department of Education.
Robert's Rules of Order. Robert.
Student Association Activities in Industrial Arts Instruction Guide 2. Virginia Department of Education.

CONTENT/CONCEPT

2. SELECTING A PROCESS OR PROJECT INDUSTRY

TASKS/COMPETENCIES

2.1 Describe process and project-type industries

2.2 Establish criteria for industry selection

2.3 Select a contemporary industry to study

2.4 Select community resources for process/project industry information

Application

CONTENT / CONCEPT

2. SELECTING A PROCESS OR PROJECT INDUSTRY

PROGRAM

INDUSTRIAL ARTS (21.0107)

TASK / COMPETENCY

2.1 Describe process- and project- type industries

COURSE

Modern Industry (8462/8463)

2.1

PERFORMANCE OBJECTIVE

P2.1 Given information about the group approach for studying industry, describe process- and project-type industries by listing three examples of each in the local, regional, or statewide area and identifying differences in the two types, all with 100% accuracy.

SELECTED ENABLING OBJECTIVES

E2.1.1 List three possible process industries for group study.

E2.1.2 List three possible project industries for group study.

E2.1.3 Use reference books to gather general information about identified process and project industries.

E2.1.4 Participate in class listing of potential process and project industries for group study.

CRITERION-REFERENCED MEASURE

C2.1 Description of process- and project-type industries, listing examples of each and identifying the differences between the two types, 100% accuracy

SELECTED INSTRUCTIONAL ACTIVITIES

1. Have students evaluate a teacher-prepared list of industries to determine if they are process or project industries (E2.1.1, E2.1.2).

2. Have students bring in a list of process and project industries located in the local, regional, or statewide area (E2.1.1, E2.1.2).

3. Guide students in their use of reference books to gather basic data on their identified process and project industries (E2.1.3).

4. Have class AIASA officers list potential process and project industries on the chalkboard, and make an overhead transparency (E2.1.4).

SELECTED TOOLS AND MATERIALS

Film projector
Overhead transparency supplies

SELECTED AUDIOVISUAL MATERIALS

Films: Refinery Processes, Drama of Metal Forming, or Rubber by Design. Shell Oil Film Library.
Shaping Progress (casting metals) (08808) or Steel and America, (90312). Audiovisual Services.

SELECTED REFERENCES

Industrial Directory of Virginia. Virginia State Chamber of Commerce.
The Maryland Plan. Maley.
Manufacturing in Virginia. Division of Industrial Development.

Application

CONTENT / CONCEPT

2. SELECTING A PROCESS OR PROJECT INDUSTRY

TASK / COMPETENCY

2.2 Establish criteria for industry selection

PROGRAM

INDUSTRIAL ARTS (21.0107)

COURSE

Modern Industry (8462/8463)

2.2

PERFORMANCE OBJECTIVE

P2.2 Given information about process and project industries, establish criteria for class selection of industry for study. Criteria must include at least three of the following: determination as either a process or project industry; availability of resources; importance of the industry to contemporary society; construction limitations; social acceptance; and time and material availability.

SELECTED ENABLING OBJECTIVES

E2.2.1 Participate in class discussion on criteria for the selection of industries and their relationship to the class.

E2.2.2 List additional criteria generated by the class and instructor in the selection of an industry.

CRITERION-REFERENCED MEASURE

C2.2 Establishment of criteria for industry selection, including three of the following: determination as either a process or project industry, availability of resources; importance of the industry to contemporary society; construction limitations; social acceptance; and time and material availability

SELECTED INSTRUCTIONAL ACTIVITIES

1. Have students suggest limitations to keep in mind while selecting a contemporary industry to study (E2.2.1).

2. Present information on criteria which should be evaluated when selecting an industry and their relationship to suggested topics (E2.2.1, E2.2.2).

3. Have AIASA officers record criteria which will be used by the class in selecting a contemporary industry to study. This should be recorded on the chalkboard and on a transparency for future use (E2.2.2).

4. Analyze suggested industries to study in light of selected criteria (E2.2.2).

SELECTED TOOLS AND MATERIALS

Overhead transparency supplies
Slide projector

SELECTED AUDIOVISUAL MATERIALS

Models, photographs, or slides of displays that show the application of criteria on industry selection (instructor provided)

SELECTED REFERENCES

The Maryland Plan. Maley.

Application

CONTENT/CONCEPT

2. SELECTING A PROJECT OR PROJECT INDUSTRY

TASK/COMPETENCY

2.3 Select a contemporary industry to study

PROGRAM

INDUSTRIAL ARTS (21.0107)

COURSE

Modern Industry (8462/8463)

2.3

PERFORMANCE OBJECTIVE

P2.3 Given a list of industries and selection criteria, select one contemporary industry to study. Selected industry must meet criteria established by class for industry selection.

SELECTED ENABLING OBJECTIVES

E2.3.1 Explain criteria for selection of process or project industry for class study.

E2.3.2 Participate in determination of type of industry for class study.

E2.3.3 Evaluate suggested industries, using selection criteria.

E2.3.4 Participate in a democratic process of selecting an industry to study that relates to established class criteria.

CRITERION-REFERENCED MEASURE

C2.3 Selection of industry for class study, meeting all selection criteria

SELECTED INSTRUCTIONAL ACTIVITIES

1. Guide students in a discussion of possibilities and limitations in studying process or project industries (E2.3.1).
2. Have students vote to determine if process or project industries will be selected for class study (E2.3.2).
3. Help students evaluate suggested contemporary industries, using identified criteria (E2.3.3).
4. Have class secretary record all group decisions and their selected contemporary industry to study (E2.2.4).

SELECTED TOOLS AND MATERIALS

Overhead projector
Movie projector

SELECTED AUDIOVISUAL MATERIALS

Transparencies:	Class-generated lists of possible contemporary industries to study and established criteria for industry selection (instructor-prepared)
Film:	Art of Communication--How to Conduct a Meeting (21908). Audiovisual Services.

SELECTED REFERENCES

The Maryland Plan. Maley.

Application

CONTENT / CONCEPT

2. SELECTING A PROCESS OR PROJECT INDUSTRY

PROGRAM

INDUSTRIAL ARTS (21.0107)

TASK / COMPETENCY

2.4 Select community resources for process/project industry information

COURSE

Modern Industry (8462/8463)

2.4

PERFORMANCE OBJECTIVE

P2.4 Given the industry selected for group study, select community and industrial resources for industrial information from the list prepared by the class committee. Selection must include addresses to use for correspondence, phone numbers to call, and industry personnel to use as speakers.

SELECTED ENABLING OBJECTIVES

E2.4.1 Suggest resources to the in-class Industrial and Community Resource Committee.

E2.4.2 Use telephone and written correspondence to contact resource people to help class.

E2.4.3 Select resources from school and community libraries.

E2.4.4 Invite people to speak about or demonstrate local contemporary industries.

CRITERION-REFERENCED MEASURE

C2.4 Selection of community resources, including addresses, phone numbers, and possible speakers

SELECTED INSTRUCTIONAL ACTIVITIES

1. Help students form an in-class Industrial and Community Resource Committee to list possible community aids (E2.4.1).
2. Have students use the telephone and written correspondence to contact resource people to help class (E2.4.2).
3. Have students select resources from school and public libraries (E2.4.3).
4. Have students invite people to speak about or demonstrate local industries to the class (E2.4.4).

SELECTED TOOLS AND MATERIALS

Writing supplies
Directories of local industry, businesses, and service agencies
Film projector
Telephone book

SELECTED AUDIOVISUAL MATERIALS

Film: Writing Different Kinds of Letters (56205). Audiovisual Services.

SELECTED REFERENCES

Student Association Activities in Industrial Arts Education, Guide 2. Virginia Department of Education.

CONTENT/CONCEPT

3. ORGANIZING PERSONNEL INTO A MANAGEMENT SYSTEM

TASKS/COMPETENCIES

3.1 List position titles for pesonnel organization and describe duties

3.2 Construct organization charts

3.3 Select roles to be played in the study of a contemporary industry

3.4 Role play occupations in a selected contemporary industry

Application

CONTENT/CONCEPT

3. ORGANIZING PERSONNEL INTO A MANAGEMENT SYSTEM

PROGRAM

INDUSTRIAL ARTS (21.0107)

TASK/COMPETENCY

3.1 List position titles for personnel organization and describe duties

COURSE

Modern Industry (8462/8463)

3.1

PERFORMANCE OBJECTIVE

P3.1 Given the industry selected for study and guidelines for report, list and describe at least 10 management position titles in a typical personnel organization for that industry. Description must be rated acceptable according to guidelines provided.

SELECTED ENABLING OBJECTIVES

E3.1.1 Describe duties of selected people who work in industry.

E3.1.2 Prepare questions for speakers from local industry.

E3.1.3 Match job titles with required tasks needed to study selected contemporary industries.

CRITERION-REFERENCED MEASURE

C3.1 List and description of 10 position titles for personnel organization, rated acceptable according to guidelines provided

SELECTED INSTRUCTIONAL ACTIVITIES

1. Have students take notes from a presentation on jobs associated with contemporary industry (E3.1.1, E3.1.2).

2. Have students prepare questions related to industrial occupations to ask a guest speaker from a local personnel office (E3.1.2).

3. Supervise selected industrial groups in listing those occupations required to complete their unit of study (E3.1.3).

SELECTED TOOLS AND MATERIALS

Handout 1: Job Descriptions of Personnnel (Appendix B)
Film projector

SELECTED AUDIOVISUAL MATERIALS

Samples of industrial organization charts

Film: Careers in Industry (79912). Audiovisual Services.

SELECTED REFERENCES

Human Resources. The Industrial Education Instructional Materials Development Project.
Manufacturing. Fales, et al.
The Maryland Plan. Maley.
The World of Manufacturing. Industrial Arts Curriculum Project.

Application

CONTENT/CONCEPT

ORGANIZING PERSONNEL INTO A MANAGEMENT SYSTEM

TASK/COMPETENCY

3.2 Construct organization charts

PROGRAM

INDUSTRIAL ARTS (21.0107)

COURSE

Modern Industry (8462/8463)

3.2

PERFORMANCE OBJECTIVE

P3.2 Given the name of an industry and personnel employed, construct an organization chart which illustrates positions of management and labor in that industry. Chart must be rated acceptable according to instructor-prepared checklist, based on industry selected.

SELECTED ENABLING OBJECTIVES

E3.2.1 Explain the purpose of organization charts.

E3.2.2 Describe positions of workers on sample industrial organization charts.

E3.2.3 Sketch industrial organization charts of selected contemporary industries.

E3.2.4 Suggest improvements to organization chart for class during a reporting seminar.

CRITERION-REFERENCED MEASURE

C3.2 Construction of organization chart which illustrates management and labor/service positions, rated acceptable according to instructor-prepared checklist

SELECTED INSTRUCTIONAL ACTIVITIES

1. Have students take notes on a visual presentation on the purpose and construction of industrial organization charts (E3.2.1, E3.2.2).

2. Have students sketch an organization chart of their selected contemporary industry, using their identified occupations (E3.2.3).

3. Supervise class officers in the construction of a class organization chart for management and cleanup (E3.2.4).

SELECTED TOOLS AND MATERIALS

Drafting tools and supplies
Instructor-prepared checklist for evaluation of organization charts, based on industry selected
Overhead projector
Sample organization charts

SELECTED AUDIOVISUAL MATERIALS

Transparency: Sample Group Personnel System. (Appendix B)

SELECTED REFERENCES

The Maryland Plan. Maley
Organizing an Industry. The American Industry Project.

Application

CONTENT/CONCEPT

3. ORGANIZING PERSONNEL INTO A MANAGEMENT SYSTEM

PROGRAM

INDUSTRIAL ARTS (21.0107)

TASK/COMPETENCY

3.3 Select roles to be played in the study of a contemporary industry

COURSE

Modern Industry (8462/8463)

3.3

PERFORMANCE OBJECTIVE

P3.3 Given self-assessment inventory worksheets and the positions or occupations needed for a selected industry, select a role or position to play. Selection should match personal work style as determined by self-assessment inventory.

SELECTED ENABLING OBJECTIVES

E3.3.1 Describe six worker styles, including conventional, creative, investigative, enterprising, mechanical, and social.

E3.3.2 Take a self-assessment inventory to determine individual work style preferences.

E3.3.3 Apply for positions related to appropriate work styles.

E3.3.4 Assist in matching class members with classroom management and laboratory cleanup assignments.

CRITERION-REFERENCED MEASURE

C3.3 Selection of role or position in class industry, matching personal work style as determined by self-assessment inventory

SELECTED INSTRUCTIONAL ACTIVITIES

1. Have students take notes on the presentation about six worker styles (E3.3.1).
2. Write a self-assessment inventory to help students select preferred work styles (E3.3.2).
3. Assign students within an industrial group to selected jobs (E3.3.3).
4. Assign students to classroom and laboratory management and cleanup positions (E3.3.4).

SELECTED TOOLS AND MATERIALS

Handout 1: Job Descriptions of Personnel (Appendix B)
Movie projector
Overhead projector
Self-assessment inventory worksheets (instructor-prepared)

SELECTED AUDIOVISUAL MATERIALS

Film: Job Interviews and Getting Started. McGraw-Hill Films.

SELECTED REFERENCES

Human Resources or Interviewing for a Job. The Industrial Education Instructional Materials Development Project.

Application

CONTENT / CONCEPT

3. ORGANIZING PERSONNEL INTO A MANAGEMENT SYSTEM

PROGRAM

INDUSTRIAL ARTS (21.0107)

TASK / COMPETENCY

3.4 Role play occupations in a selected contemporary industry

COURSE

Modern Industry (8462/8463)

3.4

PERFORMANCE OBJECTIVE

P3.4 Given assigned positions in a contemporary industry, role play those occupations, using resources, tools, and materials to assemble projects, presentations, displays, publications, and exhibits. Work must be rated acceptable according to instructor-prepared checklist based on position played.

SELECTED ENABLING OBJECTIVES

E.34.1 Describe role played by workers in occupations related to selected contemporary industries.

E3.4.2 Participate in class discussions on carrying out occupational roles.

E3.4.3 Model industrial employees in the planning and assembly of projects, presentations, displays, publications, and exhibits on selected contemporary industries.

E3.4.4 Role play classroom management and laboratory cleanup assignments.

CRITERION-REFERENCED MEASURE

C3.4 Role play of occupation in selected industry, rated acceptable according to instructor's checklist based on position played

SELECTED INSTRUCTIONAL ACTIVITIES

1. Arrange for students to visit the library to locate and preview books on industrial occupations (E3.4.1).
2. List tasks for selected occupations in a contemporary industry (E3.4.1).
3. Discuss with students responsibilities associated with occupational roles (E3.4.2).
4. Encourage students in role play of industrial occupations to plan and assemble projects, presentations, displays, publications, and exhibits representative of contemporary industries (E3.4.3).
5. Follow up students to see that they role play classroom management/laboratory cleanup assignments (E3.4.4).

SELECTED TOOLS AND MATERIALS

Handout 3: Group Project Progress Report (Appendix B)
Instructor-prepared checklists to evaluate role plays
Film projector

SELECTED AUDIOVISUAL MATERIALS

Film: Is a Career In Management For You? (35510). Audiovisual Services.

SELECTED REFERENCES

Analyzing a Career. The Industrial Education Instructional Materials Development Project.

CONTENT/CONCEPT

4. CONSTRUCTING A DISPLAY OR EXHIBIT OF INDUSTRY

TASKS/COMPETENCIES

4.1 Complete preliminary project planning

4.2 Prepare working drawings

4.3 Select and use appropriate tools and machines

4.4 Assemble industry displays

Application

CONTENT/CONCEPT

4. CONSTRUCTING A DISPLAY OR EXHIBIT OF INDUSTRY

PROGRAM

INDUSTRIAL ARTS (21.0107)

TASK/COMPETENCY

4.1 Complete preliminary project planning

COURSE

Modern Industry (8462/8463)

4.1

PERFORMANCE OBJECTIVE

P4.1 Given a selected industry and personnel, complete preliminary project planning by researching information, designing project, and writing a plan of procedure for the group study. Research and design must be completed according to guidelines given in class. Plan must include drawings; materials list; and major steps to complete a project, display, publication, and presentations.

SELECTED ENABLING OBJECTIVES

E4.1.1 Describe how industry employs planning in the development of products and projects.

E4.1.2 Identify standards established and used in industry.

E4.1.3 Establish standards for group project and display construction, including size, cost, tools used, materials used, electrical and mechanical usage, and time allotted.

E4.1.4 Outline contents and format for group presentations.

E4.1.5 Establish table of contents and style of group publications, including size, format, graphic representations, and design.

E4.1.6 Make preliminary sketches for the construction of a model of contemporary industry and the layout of its accompanying display.

E4.1.7 List steps for the construction of a contemporary industry unit using sketches, plan of procedure, and bill of materials.

E4.1.8 Specify appropriate materials and supplies.

CRITERION-REFERENCED MEASURE

C4.1 Completion of preliminary projects planning, to include:

(a) Researching information and designing project according to guidelines given in class

(b) Writing of plan of procedure containing drawings; materials list; and major steps to complete project, display, publication, and presentations

SELECTED INSTRUCTIONAL ACTIVITIES

1. Review steps to be followed in the planning of a unit of study on a contemporary industry (E4.1.1).

2. Have class officers list on chalkboard and record as minutes all standards and contents for group presentations (E4.1.2-E4.1.5).

3. Have students make sketches for the construction of their industrial model and the layout of their publication (E4.1.6).

4. Help students list steps in the plan of procedures for the assembly of the group project, presentation, display, and publication (E4.1.7).

5. Order necessary supplies for the construction of an industry (E4.1.8).

SELECTED TOOLS AND MATERIALS

Filmstrip projector
Sketching tools and supplies

SELECTED AUDIOVISUAL MATERIALS

Filmstrip: Freehand Sketching Techniques in Basic Drafting. Bergwall Productions, Inc.

SELECTED REFERENCES

The Basic Book of Drafting. Wallach.
Building to Scale. Smith and Hoppe.
General Industrial Education. Groneman and Feirer.
General Industry. Lindbeck and Lathrop.
How to Build Dioramas. Micro-Mark.
Manufacturing. Fales, et al.
The Modeler's Manual. Schleicher.
World of Construction. Industrial Arts Curriculum Project.

Application

CONTENT/CONCEPT

4. CONSTRUCTING A DISPLAY OR EXHIBIT OF INDUSTRY

TASK/COMPETENCY

4.2 Prepare working drawings

PROGRAM

INDUSTRIAL ARTS (21.0107)

COURSE

Modern Industry (8462/8463)

4.2

PERFORMANCE OBJECTIVE

P4.2 Given drawing instruments, a selected contemporary industry, preliminary sketches, plan of procedure, and bill of materials, prepare working drawings for the construction of the group project. Drawings must show correct views (including electrical and mechanical schematics), and all dimension lines, and must be completed according to established standards.

SELECTED ENABLING OBJECTIVES

E4.2.1 Explain reasons for preparing working drawings.

E4.2.2 Read a scale or rule.

E4.2.3 Name and explain how to use drawing instruments.

E4.2.4 Use drawing instruments to contruct lines and letters.

E4.2.5 Use drawing instruments to construct orthographic and pictorial drawings.

E4.2.6 Use drawing instruments to dimension drawings.

E4.2.7 Draw a working drawing for part of the group project and display, using established standards.

E4.2.8 Assist with "plan of procedure" and "bill of materials" to reflect needs as shown on working drawings.

CRITERION-REFERENCED MEASURE

C4.2 Preparation of working drawings, showing correct views (including electrical and mechanical schematics), and all dimension lines according to established standards

SELECTED INSTRUCTIONAL ACTIVITIES

1. Have students list and explain reasons for preparing working drawings (E4.2.1).
2. Have students practice measuring lines, using a scale (E4.2.2).
3. Have students practice using drawing instruments to construct lines (E4.2.2-E4.2.4).
4. Assign students to draw objects employing orthographic projection (E4.2.5).
5. Demonstrate how to draw pictorial drawings (E4.2.5).
6. Have students dimension plates prepared by instructor (E4.2.6).
7. Have groups prepare working drawings for their projects and displays (E4.2.7).
8. Review and revise plan of procedure and bill of materials (E4.2.8).

SELECTED TOOLS AND MATERIALS

Drafting instruments and supplies
Film projector
Filmstrip projector

SELECTED AUDIOVISUAL MATERIALS

Films: Drafting--Drawing and Planning (42709). Audiovisual Services.
Mechanical Drawing--Shape Description (17105). Audiovisual Services.

Filmstrips: Mechanical Drawing. Prentice-Hall Media.
Working Drawings in Basic Drafting. Bergwall Productions, Inc.

SELECTED REFERENCES

The Basic Book of Drafting. Wallach.
Exploring Careers in Industry. Miller, et al.
Exploring Technology. Bame and Cummings.
General Industrial Education. Groneman and Feirer.
General Industry. Lindbeck and Lathrop.

Application

CONTENT/CONCEPT
4. CONSTRUCTING A DISPLAY OR EXHIBIT OF INDUSTRY

PROGRAM
INDUSTRIAL ARTS (21.0107)

TASK/COMPETENCY
4.3 Select and use appropriate tools and machines

COURSE
Modern Industry (8462/8463)

4.3

PERFORMANCE OBJECTIVE

P4.3 Given a laboratory setting, select and use tools and machines necessary for the construction of a model or display of a process/project industry. Students must use layout tools, cutting and forming tools, and machines, wearing safety glasses and taking all other appropriate safety precautions.

SELECTED ENABLING OBJECTIVES

E4.3.1 List laboratory safety procedures and rules.

E4.3.2 Demonstrate use of appropriate layout, cutting, and forming tools and machines needed to construct a group project and display.

E4.3.3 Outline tool and machine maintenance and safety hazards.

E4.3.4 Use safely the following layout tools: bench rules, steel tapes, try and combination squares, compasses, and others identified as appropriate by the instructor.

E4.3.5 Use safely the following cutting tools and machines: coping, back, rip and cross-cut saws; smoothing and block planes; brace and bit and hand drills; tin snips; saber, scroll, and band saws; drill press; and others identified as appropriate by the instructor.

E4.3.6 Use safely the following forming tools and machines: files, surforms, and rasps; sanding blocks; mallets; box and pan break; belt, disc, and finishing sanders; and others identifies as appropriate by the instructor.

E4.3.7 Describe construction characteristics of selected materials.

E4.3.8 Make component parts of project, using instructor-approved tools, and machines.

CRITERION-REFERENCED MEASURE

C4.3 Selection and use of appropriate layout, cutting, and forming tools and machines for construction of model or display, observing all safety precautions

SELECTED INSTRUCTIONAL ACTIVITIES

1. Discuss potential hazards in the industrial arts laboratory (E4.3.1).
2. Assign students to produce safety posters on basic laboratory safety or tool/machine usage (E4.3.1-E4.3.6).
3. Demonstrate proper use of layout, cutting, and forming tools and machines (E4.3.2).
4. Discuss tool and machine hazards and disrepair that should be reported to the safety committee and instructor (E4.3.3).
5. Demonstrate use of layout tool to mark off material (E4.3.4).
6. Demonstrate use of cutting tools and machine (E4.3.5).
7. Demonstrate use of forming tools and machines (E4.3.6).
8. Assist Industrial Community Resources Committee in locating and acquiring free materials from local industry and business (E4.3.7).
9. Assist student in making component parts for group projects and displays (E4.3.8).

SELECTED TOOLS AND MATERIALS

Film projector
Filmstrip projector
Applicable hand tools and machines
Safety poster materials

SELECTED AUDIOVISUAL MATERIALS

Films:	ABCs of Handtools (20810 and 20910). Audiovisual Services.
	Handtools for Metalworking (48912). Audiovisual Services.
	Handtools for Woodworking (58208). Audiovisual Services.
	Safety in the Shop (37010). Audiovisual Services.
Filmstrips:	Measures in a School Shop. Interpretive Education.
	Woodworking Handtools Explained. Bergwall Productions, Inc.

SELECTED REFERENCES

Basic Industrial Arts. Miller, et. al.
Exploring Technology. Bame and Cummings.
General Industrial Education. Groneman and Feirer.
General Industry. Lindbeck and Lathrop.

Application

CONTENT/CONCEPT
4. CONSTRUCTING A DISPLAY OR EXHIBIT OF INDUSTRY

PROGRAM
INDUSTRIAL ARTS (21.0107)

TASK/COMPETENCY
4.4 Assemble industry displays

COURSE
Modern Industry (8462/8463)

4.4

PERFORMANCE OBJECTIVE

P4.4 Given component parts of display, fastening tools and supplies, and instructor's specifications, assemble the industry display according to plan of procedure. Finish must be appropriate and work quality must conform to instructor's specifications.

SELECTED ENABLING OBJECTIVES

E4.4.1 Describe the fastening principles of adhesion, cohesion, and mechanical linkage.

E4.4.2 Use safely the following fastening tools and supplies: hammers and nails, rivets, screws and screwdrivers, glues (white, epoxy, and hot), clamps and vises, solder and soldering irons, or others identified appropriate by the instructor.

E4.4.3 Assemble components of projects and displays.

E4.4.4 Install mechanical and electrical components of projects and displays.

E4.4.5 Use safely the following finishing tools and supplies: paint (water and oil base), brushes and rollers, canned spray paints and finishes, surface primers, stains, or others identified appropriate by the instructor.

E4.4.6 Assist others in finishing project and display with appropriate finishes and illustrations, pictures, and narrative information.

CRITERION-REFERENCED MEASURE

C4.4 Assembly of display according to plan of procedure, with appropriate finish and work quality as specified by instructor

SELECTED INSTRUCTIONAL ACTIVITIES

1. Have students identify assembled samples to determine if they represent adhesion, cohesion, or mechanical linkage (E4.4.1).

2. Demonstrate assembly and fastening procedures (E4.4.2).

3. Have students practice assembly techniques (E4.4.2).

4. Demonstrate finishing procedures (E4.4.5).

5. Have students practice finishing techniques (E4.4.5).

6. Help students assemble group projects and displays, including the installation of mechnical and electrical components (E4.4.3, E4.4.4).

7. Help students finish group projects and displays (E4.4.6).

SELECTED TOOLS AND MATERIALS

Film projector
Filmstrip projector
Applicable handtools and supplies
Instructor-prepared specifications for displays
Overhead projector

SELECTED AUDIOVISUAL MATERIALS

Films:	Glue and Clamps (10210). Audiovisual Services.
Filmstrips:	Basic Assembly Techniques. Prentice-Hall Media.
	Woodworking Assembly. Prentice-Hall Media.
Transparency:	Basic Display Types. (Appendix B)

SELECTED REFERENCES

Basic Industrial Arts. Miller, et al.
Building to Scale. Smith and Hoppe.
Exploring Technology. Bame and Cummings.
General Industrial Education. Groneman and Feirer.
General Industry. Lindbeck and Lathrop.
The Modeler's Manual. Schleicher.

CONTENT/CONCEPT

5. COMMUNICATING INFORMATION THROUGH SEMINARS, REPORTS, AND DISPLAYS

TASKS/COMPETENCIES

5.1 Prepare written reports to present orally during progress and final seminars

5.2 Assemble a group publication about an industry studied

5.3 Prepare a public exhibit of contemporary industry

5.4 Describe the effects that contemporary industry has had on people and societies

5.5 Follow rules for participation in competitive events

Application

CONTENT / CONCEPT

5. COMMUNICATING INFORMATION THROUGH SEMINARS, REPORTS, AND DISPLAYS

TASK / COMPETENCY

5.1 Prepare written reports to present orally during progress and final seminars

PROGRAM

INDUSTRIAL ARTS (21.0107)

COURSE

Modern Industry (8462/8463)

5.1

PERFORMANCE OBJECTIVE

P5.1 Given information about a process or project industry, prepare written reports to present orally during progress and final reporting seminars. The report must contain a description of personnel activities, technical data, any problems or solutions, and a summary of work completed.

SELECTED ENABLING OBJECTIVES

E5.1.1 List and describe components of a group project written report.

E5.1.2 Research selected industry to gather information.

E5.1.3 Identify qualities of a good report.

E5.1.4 List standards established for the composition of written reports.

E5.1.5 Illustrate technical details for written reports.

E5.1.6 Prepare audiovisuals for oral presentation.

E5.1.7 Present information to the class about work completed.

CRITERION-REFERENCED MEASURE

C5.1 Preparation of written reports to present orally during progress and final reporting seminars, to contain information about personnel activities in the group, technical data about industry or display, any problems or solutions, and a summary of work completed

SELECTED INSTRUCTIONAL ACTIVITIES

1. Have students discuss a teacher-prepared list of components for a group project written report (E5.1.1).
2. Have students visit the library and search reference books to gather materials and information for the research report (E5.1.2).
3. Have students discuss established standards for the composition of a written report (E5.1.3, E5.1.4).
4. Help students take photographs, or make transparencies and slides for research paper and presentation (E5.1.5, E5.1.6).
5. Supervise students as they photocopy and mount diagrams and photographs for group project papers and presentations (E5.1.5, E5.1.6).
6. Have students work with other group members, school resource personnel, and parents to write a research report (E5.1.1-E5.1.6).
7. Have class officers organize and conduct seminars to report the results of the unit of study (E5.1.7).

SELECTED TOOLS AND MATERIALS

Cameras and photo supplies
Copying machines and supplies
Drawing instruments and supplies
Dry mount press
Handout 2: Suggested Outline for the Group Project Company Book (Appendix B)
Videotape player and monitor
Filmstrip projector

SELECTED AUDIOVISUAL MATERIALS

Filmstrip: How to Find Books in the Library. Interpretive Education.
Videotape: Industrial Arts for the '70s, Lesson 22: If You Can't Write--Call Right (31290).

SELECTED REFERENCES

Graphic Communications. Broekhuizen.
The Maryland Plan. Maley.

Application

CONTENT/CONCEPT

5. COMMUNICATING INFORMATION THROUGH SEMINARS, REPORTS, AND DISPLAYS

PROGRAM

INDUSTRIAL ARTS (21.0107)

TASK/COMPETENCY

5.2 Assemble a group publication about an industry studied

COURSE

Modern Industry (8462/8463)

5.2

PERFORMANCE OBJECTIVE

P5.2 Given written reports by group members, assemble a group publication about the industry studied. The publication must pull all experiences together into a company book with a cover, preface, table of contents, personnel activities, industry and display details, and related materials appropriate to a book, and be rated acceptable according to instructor-prepared checklist.

SELECTED ENABLING OBJECTIVES

E5.2.1 List contents of a group project publication.

E5.2.2 Describe editing of copy for a group project publication.

E5.2.3 Draw graphics for a group publication cover.

E5.2.4 Define the elements of design.

E5.2.5 Prepare copy, using a typewriter.

E5.2.6 Select graphic reproduction methods for publications.

E5.2.7 Lay out copy, photographs, and illustrations.

E5.2.8 Reproduce group project publication.

CRITERION-REFERENCED MEASURE

C5.2 Assembly of all student reports into a group publication which contains a cover, preface, table of contents, activities by personnel, details of the industry and display, and other materials to make the company book complete, to be rated acceptable according to instructor-prepared checklist

SELECTED INSTRUCTIONAL ACTIVITIES

1. Have students list table of contents for company books (E5.2.1).
2. Show students what editors look for in copy (E5.2.2).
3. Supervise art work and graphics presentation (E5.2.3, E5.2.4).
4. Have students type copy (E5.2.5).
5. Demonstrate on ditto, offset, and photocopy reproduction (E5.2.6).
6. Have students lay out pages for publication (E5.2.7).
7. Supervise students as they reproduce group project publication (E5.2.8).

SELECTED TOOLS AND MATERIALS

Ditto machine and supplies
Drafting instruments and supplies
Graphic layout tools and supplies
Instructor-prepared checklist to evaluate group publication
Offset press and supplies
Photocopy machine
Videotape player and monitor

SELECTED AUDIOVISUAL MATERIALS

Videotape: Industrial Arts for the '70s, Lesson 9--Print It Like It Is (28890). Audiovisual Services.

SELECTED REFERENCES

Graphic Arts Technology. Karsnitz.
Graphic Communications. Broekhuizen.

Application

CONTENT/CONCEPT
5. COMMUNICATING INFORMATION THROUGH SEMINARS, REPORTS, AND DISPLAYS

PROGRAM
INDUSTRIAL ARTS (21.0107)

TASK/COMPETENCY
5.3 Prepare a public exhibit of contemporary industry

COURSE
Modern Industry (8462/8463)

5.3

PERFORMANCE OBJECTIVE

P5.3 Given the assembled group project, reports, and publications, prepare a public exhibit to show the school and community the results of industrial arts activities. Exhibit must contain project or process industry display, the report, and the organizational chart, and be prepared according to guidelines given in class.

SELECTED ENABLING OBJECTIVES

E5.3.1 List standards established for display and exhibit construction.

E5.3.2 Describe features or exemplary group project displays.

E5.3.3 Cite examples of the value of community exhibits.

E5.3.4 Design an exhibit of contemporary industry.

E5.3.5 Prepare graphics for the group exhibit.

E5.3.6 Set up a public relations program to invite the community to view the exhibit.

CRITERION-REFERENCED MEASURE

C5.3 Assembly of an exhibit for public viewing, showing the display of a project or process industry, the written report, and the organizational chart, prepared according to guidelines given in class

SELECTED INSTRUCTIONAL ACTIVITIES

1. Present the purpose and value of a community exhibit on modern industry (E5.3.1-E5.3.3).
2. Show students photos or slides of earlier group project exhibits (E5.3.2).
3. Have class select a design for a group exhibit (E5.3.4).
4. Help students compose graphics to accompany a group exhibit (E5.3.5).
5. Prepare flyers and letters to advertise the group exhibit (E5.3.6).
6. Set up the group exhibits in class to try out (E5.3.6).
7. Have class officers invite visitors and the group exhibit visitations (E5.3.6).

SELECTED TOOLS AND MATERIALS

Graphic reproduction tools and supplies
Guidelines for exhibit preparation (instructor-prepared)
Microcomputer with Apple Printshop program
Selected laboratory supplies and equipment
Sign making tools and supplies

SELECTED AUDIOVISUAL MATERIALS

Slides or photos of other exhibits and visitations (instructor-provided)

SELECTED REFERENCES

Annual Program of AIASA Activities, Guide 5. Virginia Department of Education.
Student Association Activities in Industrial Arts Instruction, Guide 2. Virginia Department of Education.

Application

CONTENT/CONCEPT

5. COMMUNICATING INFORMATION THROUGH SEMINARS, REPORTS, AND DISPLAYS

PROGRAM

INDUSTRIAL ARTS (21.0107)

TASK/COMPETENCY

5.4 Describe the effects that contemporary industry has had on people and societies

COURSE

Modern Industry (8462/8463)

5.4

PERFORMANCE OBJECTIVE

P5.4 Given experiences in study of a process or project industry and participation in class seminars, describe the effects that selected contemporary industries have had on people and societies. At least three effects should be cited, including benefits to economy, employment, and production of consumer goods.

SELECTED ENABLING OBJECTIVES

E5.4.1 List the effects that modern industry has on workers.

E5.4.2 List the effects that modern industry has had on the American and world societies.

E5.4.3 Describe worldwide industrial developments.

E5.4.4 Explain contributions of industry to society and people.

CRITERION-REFERENCED MEASURE

C5.4 Description of effects of technology on people and societies, to include:
(a) benefits to economy
(b) employment
(c) production of consumer goods

SELECTED INSTRUCTIONAL ACTIVITIES

1. Have students read about social-cultural effects that selected modern industries have had on people and societies (E5.4.1, E5.4.2).
2. Conduct debates on the role of the U.S. in industrial development (E5.4.3).
3. Have students to bring in articles about industrial development around the world (E5.4.3).
4. Show film about contributions of industry to society (E5.4.4).

SELECTED TOOLS AND MATERIALS

Film projector

SELECTED AUDIOVISUAL MATERIALS

Group project display

Film: Your Chance to Live--Technological Failures (27709). Audiovisual Services.
The Workmanship Myth (No. 31446). Modern Talking Pictures.

SELECTED REFERENCES

Technology: An Introduction. DeVore.
Technology, Change and Society. Pytlik, et al.

Application

CONTENT / CONCEPT
5. COMMUNICATING INFORMATION THROUGH SEMINARS, REPORTS, AND DISPLAYS

PROGRAM
INDUSTRIAL ARTS (21.0107)

TASK / COMPETENCY
5.5 Follow rules for participation in competitive events

COURSE
Modern Industry (8462/8463)

5.5

PERFORMANCE OBJECTIVE

P5.5 Given the necessary rules and registration information, follow rules for participation in the Modern Industry Contest. Entry must contain the display of process or project industry, organizational charts, and the written report in accordance with AIASA standards.

SELECTED ENABLING OBJECTIVES

E5.5.1 List and explain the duties of the Recognition Committee.

E5.5.2 Create an awards system for the class.

E5.5.3 Explain procedure for registering class for Modern Industry Contest at Spring Festival.

E5.5.4 Explain rules for oral presentation in Modern Industry Contest.

CRITERION-REFERENCED MEASURE

C5.5 Modern Industry Contest entry in accordance with AIASA standards

SELECTED INSTRUCTIONAL ACTIVITIES

1. Have a class discussion of the duties for the in-class Recognition Committee (E5.5.1).
2. Have class officers establish an awards system (E5.5.2).
3. Present information on procedures for registering in local regional and state competition (E5.5.3).
4. Distribute copies of rules for Modern Industry Contest (E5.5.4).

SELECTED TOOLS AND MATERIALS

Copies of rules for American Enterprise Contest from AIASA Guide 6
Registration forms and procedures

SELECTED AUDIOVISUAL MATERIALS

Pictures of past Spring Festival activities (instructor-provided)

SELECTED REFERENCES

Annual Program of AIASA Activities, Guide 5. Virginia Department of Education.
Standards for AIASA Events, Guide 6. Virginia Department of Education.

CONTENT/CONCEPT

6. INTRODUCING LINE-PRODUCTION INDUSTRIES

TASKS/COMPETENCIES

6.1 Describe the line-production approach to the study of contemporary industry

6.2 Participate in the selection of officers to manage class and enterprise production

Application

CONTENT / CONCEPT

6. INTRODUCING LINE-PRODUCTION INDUSTRIES

PROGRAM

INDUSTRIAL ARTS (21.0107)

TASK / COMPETENCY

6.1 Describe the line-production approach to the study of contemporary industry

COURSE

Modern Industry (8462/8463)

6.1

PERFORMANCE OBJECTIVE

P6.1 Given a visual presentation by the teacher, describe in a written paragraph the line-production approach to the study of contemporary industry, including information about line production and appropriate examples of companies and products. Descriptive statements must be accurate and reflect facts cited during the visual presentation.

SELECTED ENABLING OBJECTIVES

E6.1.1 Trace the history of line production.

E6.1.2 Differentiate between custom, batch, and continuous production.

E6.1.3 Describe the importance of interchangeable/standardized parts.

E6.1.4 Define automation and cybernetics.

E6.1.5 List local and regional companies whom employ line-production techniques.

E6.1.6 Describe advantages and disadvantages of line-production products.

CRITERION-REFERENCED MEASURE

C6.1 Written paragraph including accurate information about line production and appropriate examples of companies and products, to reflect facts cited by the teacher during visual presentation

SELECTED INSTRUCTIONAL ACTIVITIES

1. Have students listen to a presentation on the history of line production (E6.1.1).
2. Arrange library or class references to enable students to define line production, custom production, batch production, continuous production, interchangeable/standardized parts, automation, and cybernetics (E6.1.2-E6.1.4).
3. Have students bring to class lists of local and regional companies who employ line-production techniques (E6.1.5).
4. Show the film titled Let's Make Money--for Everyone (E6.1.6).
5. Show charts that illustrate how line-production activities are organized (E6.1.5).
6. Set up examples of line-production products (E6.1.6).

SELECTED TOOLS AND MATERIALS

Overhead projector
Videotape player and monitor
Samples of past production products

SELECTED AUDIOVISUAL MATERIALS

Videotape: Industrial Arts for the '70s, Lesson 4--Let's Make Money--for Everyone (30290). Audiovisual Services.

Transparencies: Transparency Masters. Manufacturing Forum, Ball State University.

SELECTED REFERENCES

Manufacturing. Fales, et al.
World of Manufacturing. Industrial Arts Curriculum Project.
The Maryland Plan. Maley.
Manufacturing. Wright and Jensen.

Application

CONTENT / CONCEPT

6. INTRODUCING LINE-PRODUCTION INDUSTRIES

PROGRAM

INDUSTRIAL ARTS (21.0107)

TASK / COMPETENCY

6.2 Participate in the selection of officers to manage class and enterprise production

COURSE

Modern Industry (8462/8463)

6.2

PERFORMANCE OBJECTIVE

P6.2 Given information about production industries, participate in the selection of class officers to manage class and production activities. Titles and duties of class officers selected must reflect those of officers in a line-production corporation.

SELECTED ENABLING OBJECTIVES

E6.2.1 Explain the duties of officers in a corporation.

E6.2.2 Discuss possible titles of managers and production workers.

E6.2.3 Explain the steps necessary to form a company.

E6.2.4 List opportunities and risks of operating a company.

CRITERION-REFERENCED MEASURE

C6.2 Participation in selection of officers to manage the line-production study of contemporary industries, to reflect titles and duties of officers in a line-production corporation

SELECTED INSTRUCTIONAL ACTIVITIES

1. Distribute and discuss list of duties for officers in corporation (E6.2.1).
2. Use organizational charts to show titles of President, Vice President, Treasurer, etc. (E6.2.2).
3. Have students observe presentation on forming an enterprising company (E6.2.3).
4. Discuss risks and opportunities of operating a business (E6.2.4).

SELECTED TOOLS AND MATERIALS

Sample organization charts
Film projector
Overhead projector

SELECTED AUDIOVISUAL MATERIALS

Film: American Enterprise Innovation (No. 31163). Modern Talking Picture Service.

Transparencies: Free Enterprise. DCA Educational Products.

SELECTED REFERENCES

The American Economic System. The Advertising Council, Inc.
Annual Program of AIASA Activities, Guide 5. Virginia Department of Education.
Student Association Activities in Industrial Arts Instruction, Guide 2. Virginia Department of Education.

CONTENT/CONCEPT

7. DETERMINING PRODUCT FOR PRODUCTION

TASKS/COMPETENCIES

7.1 Establish criteria for the selection of a product

7.2 Select a product for line production

Application

CONTENT/CONCEPT

7. DETERMINING PRODUCT FOR PRODUCTION

PROGRAM

INDUSTRIAL ARTS (21.0107)

TASK/COMPETENCY

7.1 Establish criteria for the selection of a product

COURSE

Modern Industry (8462/8463)

7.1

PERFORMANCE OBJECTIVE

P7.1 Given a list of possible selection factors, establish criteria to be used by class in selecting product. Criteria must include 10 items relating to product usefulness, student ability to make and sell product, and the laboratory facilities available.

SELECTED ENABLING OBJECTIVES

E7.1.1 Evaluate selection factors presented in class.

E7.1.2 List additional criteria to use in evaluating products for production.

E7.1.3 Evaluate sample products for production, using established criteria.

CRITERION-REFERENCED MEASURE

C7.1 Establishment of list of criteria which will be used in determining the best product, to contain at least 10 items relating to product usefulness, student ability to make and sell the product, and the laboratory facilities available

SELECTED INSTRUCTIONAL ACTIVITIES

1. Present selection factors to class for evaluation (E7.1.1).

2. Have students discuss additional criteria that could be used in product selection (E7.1.2).

3. Have AIASA officers record criteria which will be used by the class in evaluation of production products for final selection. Record on chalkboard and on overhead transparency (E7.1.1, E7.1.2).

4. Have students apply criteria to sample products (E7.1.3).

SELECTED TOOLS AND MATERIALS

Handout 1: Criteria for Product Selection (Appendix C)
Overhead transparency supplies

SELECTED AUDIOVISUAL MATERIALS

Examples of past projects which show the application of selection criteria

SELECTED REFERENCES

Manufacturing. Wright and Jensen.
The Maryland Plan. Maley.

Application

CONTENT / CONCEPT

7. DETERMINING PRODUCT FOR PRODUCTION

PROGRAM

INDUSTRIAL ARTS (21.0107)

TASK / COMPETENCY

7.2 Select a product for line production

COURSE

Modern Industry (8462/8463)

7.2

PERFORMANCE OBJECTIVE

P7.2 Given the criteria established for product selection, a knowledge of laboratory equipment and supplies, and a probable sales forecast, select a product for line-production study. Product must meet all criteria established by class.

SELECTED ENABLING OBJECTIVES

E7.2.1 Research the cost of industrial materials.

E7.2.2 Conduct cost analyses of selected products.

E7.2.3 Conduct survey to predict sales forecasts of selected products.

E7.2.4 Estimate profits for selected production products.

E7.2.5 Participate in class meeting to present products and vote.

CRITERION-REFERENCED MEASURE

C7.2 Selection of a product to line-produce, using all criteria established by class

SELECTED INSTRUCTIONAL ACTIVITIES

1. Have students identify the local cost of selected industrial materials (E7.2.1).
2. Have students conduct a cost analysis of five selected products (E7.2.2).
3. Supervise student conduct of a consumer survey of possible products (E7.2.3).
4. Help students estimate profit return for selected products (E7.2.4).
5. Have students present their product ideas to the class, using drawings, prototypes, and chalkboard (E7.2.5).
6. Have a preliminary vote to select five possible line-production products, using established criteria (E7.2.5).
7. Have students democratically select one product for line-production, using data generated from above activities (E7.2.5).

SELECTED TOOLS AND MATERIALS

Overhead projector
Telephone book

SELECTED AUDIOVISUAL MATERIALS

Transparency: Selection of a Product (Appendix C)

SELECTED REFERENCES

Manufacturing. Fales, et al.
World of Manufacturing. Industrial Arts Curriculum Project.

CONTENT/CONCEPT

8. MANAGING THE ENTERPRISE AND PERSONNEL

TASKS/COMPETENCIES

8.1 Establish an enterprise

8.2 Identify personnel required to manage line production and state their functions

8.3 Construct a personnel organization chart for an enterprise

8.4 Apply for personnel positions in this line-production industry

8.5 Participate as an employee in a line-production industry

8.6 Plan for the line production of a product

Application

CONTENT/CONCEPT

8. MANAGING THE ENTERPRISE AND PERSONNEL

TASK/COMPETENCY

8.1 Establish an enterprise

PROGRAM

INDUSTRIAL ARTS (21.0107)

COURSE

Modern Industry (8462/8463)

8.1

PERFORMANCE OBJECTIVE

P8.1 Given a selected class product, establish an enterprise, using steps which determine form of ownership with name and trademark, method of finance, and profit estimates. Completion of each step must be rated acceptable according to instructor-prepared checklist.

SELECTED ENABLING OBJECTIVES

E8.1.1 List and describe the steps to follow in establishing a classroom enterprise.

E8.1.2 Define each of the following terms, including their advantages and limitations: proprietorship, partnership, and corporation.

E8.1.3 Select a company name.

E8.1.4 Design a company trademark.

E8.1.5 Describe the following methods of finance: bank loan, individual loan, bonds, and stock.

E8.1.6 Select a method of finance.

E8.1.7 Design and print stock certificates.

E8.1.8 Calculate break-even points.

E8.1.9 Determine the number of products/services to be sold.

CRITERION-REFERENCED MEASURE

C8.1 Establishment of enterprise, using steps to determine form of ownership, the method of finance, and profit estimates; completion of each step to be rated acceptable according to instructor-prepared checklist

SELECTED INSTRUCTIONAL ACTIVITIES

1. Have students observe a presentation on establishing an enterprise (E8.1.1, E8.1.2).
2. Have students incorporate the class and name their company (E8.1.3).
3. Help students write articles of incorporation (E8.1.2).
4. Discuss sample trademarks and have student begin design (E8.1.4).
5. Discuss various methods of finance (E8.1.5, E8.1.6).
6. Show students sample certificates and help a committee design and print stock certificates (E8.1.7).
7. Check calculations of break-even points and number of products/services to be sold (E8.1.8, E8.1.9).
8. Help students set number of shares to be sold and cost per share (E8.1.6, E8.1.7).

SELECTED TOOLS AND MATERIALS

Ditto machine and supplies
Drafting instruments and supplies
Filmstrip projector
Instructor-prepared checklists to evaluate each step of enterprise establishment
Movie projector
Overhead projector
Videotape player and monitor

SELECTED AUDIOVISUAL MATERIALS

Films:	What Is a Company? Tupperware Company. Profit--You Gotta Be Out of Your Cotton-Pickin' Mind (43404). Audiovisual Services
Filmstrip:	What's In a Name? Manufacturing Forum, Ball State University.
Videotape:	Industrial Arts for the '70s, Lesson 5--You've Got to Be Organized (30390).
Transparency:	Company Organization (Appendix C)

SELECTED REFERENCES

A Curriculum Manual for Manufacturing. Mid-America.
Finance: Organizing and Financing the Enterprise. Manufacturing Forum, Ball State University.
World of Manufacturing. Industrial Arts Curriculum Project.
Manufacturing. Fales, et al.

Application

CONTENT/CONCEPT

8. MANAGING THE ENTERPRISE AND PERSONNEL

PROGRAM

INDUSTRIAL ARTS (21.0107)

TASK/COMPETENCY

8.2 Identify personnel required to manage line production and state their functions

COURSE

Modern Industry (8462/8463)

8.2

PERFORMANCE OBJECTIVE

P8.2 Given personnel guidelines and samples or products on services, identify the personnel required to manage line production and state their functions. Positions identified must include Board of Directors, President, General Manager, Production Manager, Personnel Manager, Accounting Director, Director of Marketing, and Engineer; functions of each must be accurately stated according to guidelines provided.

SELECTED ENABLING OBJECTIVES

E8.2.1 List tasks and associated job titles required for production industries.

E8.2.2 Identify management personnel requirements for an enterprise.

E8.2.3 Establish a board of directors for a selected enterprise.

CRITERION-REFERENCED MEASURE

C8.2 Identification of management personnel for line production, including Board of Directors, President, General Manager, Production Manager, Personnel Manager, Accounting Director, Director of Marketing, and Engineer; functions of each stated accurately according to personnel guidelines provided in class

SELECTED INSTRUCTIONAL ACTIVITIES

1. Have students observe a presentation on tasks and jobs in industry (E8.2.1).
2. Involve class in discussing of jobs needed for the production of their product or service (E8.2.2).
3. Have class officers record titles of management personnel needed in class (E8.2.2).
4. Have officers democratically select a class board of directors (E8.2.3).

SELECTED TOOLS AND MATERIALS

Ditto machine and thermofax masters
Guidelines for personnel function statements (instructor-prepared)
Handout 2: Sample Line Production Personnel (Appendix C)
Overhead projector

SELECTED AUDIOVISUAL MATERIALS

Transparencies: Introduction to Manufacturing & Management. Manufacturing Forum, Ball State University.

SELECTED REFERENCES

A Curriculum Manual for Manufacturing. Mid-America.
Manufacturing. Fales, et al.
World of Manufacturing. Industrial Arts Curriculum Project.

Application

CONTENT / CONCEPT

8. MANAGING THE ENTERPRISE AND PERSONNEL

PROGRAM

INDUSTRIAL ARTS (21.0107)

TASK / COMPETENCY

8.3 Construct a personnel organization chart for an enterprise

COURSE

Modern Industry (8462/8463)

8.3

PERFORMANCE OBJECTIVE

P8.3 Given posterboard, felt tip pen, and a list of personnel needed for production, construct a personnel chart for the class enterprise or company. The chart must show title of each worker with lines leading to supervisor or subordinates of each.

SELECTED ENABLING OBJECTIVES

E8.3.1 Explain examples of personnel organization charts.

E8.3.2 Sketch a personnel organization chart of production enterprise.

E8.3.3 Describe how organization chart is used for laboratory cleanup.

CRITERION-REFERENCED MEASURE

C8.3 Construction of a personnel chart showing personnel titles and lines leading to subordinates or supervisor

SELECTED INSTRUCTIONAL ACTIVITIES

1. Have students discuss the purpose and construction techniques for personnel organization charts in a review session (E8.3.1).

2. Assign students to sketch possible charts (E8.3.2).

3. Have class officers construct a pesonnel organization chart for the class enterprise and laboratory cleanup (E8.3.3).

SELECTED TOOLS AND MATERIALS

Drafting tools and supplies
Overhead projector
Posterboard and felt tip pens

SELECTED AUDIOVISUAL MATERIALS

Sample personnel organization charts (instructor-provided)

Transparency: Organization of Company (Apendix C)

SELECTED REFERENCES

Manufacturing. Fales, et al.
The Maryland Plan. Maley.
Finance: Organizing and Financing the Enterprise. Manufacturing Forum, Ball State University.
Manufacturing. Wright and Jensen.

Application

CONTENT / CONCEPT

8. MANAGING THE ENTERPRISE AND PERSONNEL

PROGRAM

INDUSTRIAL ARTS (21.0107)

TASK / COMPETENCY

8.4 Apply for personnel positions in this line-production industry

COURSE

Modern Industry (8462/8463)

8.4

PERFORMANCE OBJECTIVE

P8.4 Given a list of all personnel needed for a line-production industry, apply and interview for a specific position. Application and interview must reflect knowledge of the duties and responsibilities of the position chosen.

SELECTED ENABLING OBJECTIVES

E8.4.1 Describe the following worker styles: conventional, creative, investigative, enterprising, mechanical, and social.

E8.4.2 Conduct a self-assessment to determine individual student work styles.

E8.4.3 Select specific role listed on personnel organization chart.

E8.4.4 Complete application for job.

E8.4.5 Identify possible questions which may be asked during an interview.

CRITERION-REFERENCED MEASURE

C8.4 Completed application and interview for specific job in line-production industry, reflecting, knowledge of the duties and responsibilities of the position chosen

SELECTED INSTRUCTIONAL ACTIVITIES

1. Review characteristics associated with worker styles (E8.4.1).

2. Help students complete a worker style inventory (E8.4.2).

   NOTE: If students have already completed the self-assessment inventory for Task 3.3, they need only to refer to it and make any changes they desire.

3. Have each student select and apply for a specific job in the line-production industry (E8.4.3, E8.4.4).

4. Discuss the importance of job interviews, emphasizing possible questions an applicant maybe asked and those the applicant may want to ask (E8.4.5).

SELECTED TOOLS AND MATERIALS

Applications
Film projector
Handout 6: Labor Duties and Responsibilities (Appendix C)
Personnel list
Self-assessment inventories

SELECTED AUDIOVISUAL MATERIALS

Films: Is a Career as a Technician For You? AIMS Instructional Media Services, Inc.
Is a Career in Sales For You? AIMS Instructional Media Services, Inc.
My First Job--Stock Clerk. Coronet Instructional Films.
Job Interviews and Getting Started, McGraw-Hill Films.

SELECTED REFERENCES

Human Resources or Interviewing for a Job. The Industrial Education Instructional Materials Development Project.
Manufacturing. Wright and Jensen.

Application

CONTENT / CONCEPT

8. MANAGING THE ENTERPRISE AND PERSONNEL

TASK / COMPETENCY

8.5 Participate as an employee in a line-production industry

PROGRAM

INDUSTRIAL ARTS (21.0107)

COURSE

Modern Industry (8462/8463)

8.5

PERFORMANCE OBJECTIVE

P8.5 Given an assigned position in a line-production industry, participate as an employee, using resources, tools, and materials to produce product presentations, publications, and displays. Participation must be rated acceptable according to instructor-prepared checklist based on occupational role.

SELECTED ENABLING OBJECTIVES

E8.5.1 Research assigned position or occupation as related to a line-production industry.

E8.5.2 Participate in class discussions on organizing and carrying out responsibilities.

E8.5.3 Model industrial employees in the planning and assembly of products, presentations, displays, and publications related to a line-production industry.

E8.5.4 Perform classroom management and laboratory cleanup assignments.

CRITERION-REFERENCED MEASURE

C8.5 Instructor-prepared checklist, all items rated acceptable

SELECTED INSTRUCTIONAL ACTIVITIES

1. Arrange for students to visit the library to locate and review books on industrial occupations (E8.5.1).

2. Have students discuss job descriptions for selected occupations in a line-production industry (E8.5.1, E8.5.2).

3. Discuss with students responsibilities associated with line-production occupational roles (E8.5.2).

4. Observe student role plays of industrial occupations to plan and assemble products, presentations, displays, and publications (E8.5.3).

5. Observe student classroom management/laboratory cleanup assignments (E8.5.4).

SELECTED TOOLS AND MATERIALS

Handout 5: Line Production Lead Time Activities (Appendix C)
Instructor-prepared checklist to evaluate participation of each student, based on occupational role
Film projector

SELECTED AUDIOVISUAL MATERIALS

Film: Is a Career in Management For You? (35510). Audiovisual Services.
The Apprentice Experience. Newport News Ship Yard.

SELECTED REFERENCES

Analyzing A Career. The Industrial Education Instructional Materials Development Project.
Manufacturing. Wright and Jensen.

Application

CONTENT / CONCEPT

8. MANAGING THE ENTERPRISE AND PERSONNEL

PROGRAM

INDUSTRIAL ARTS (21.0107)

TASK / COMPETENCY

8.6 Plan for the line production of a product

COURSE

Modern Industry (8462/8463)

8.6

PERFORMANCE OBJECTIVE

P8.6 Given the selected product, plan for its production and related presentations, displays, and publications. Plan must include worker responsibilities, time schedules, and outline of procedures, and must be prepared according to guidelines given in class.

SELECTED ENABLING OBJECTIVES

E8.6.1 Conduct or participate in a management seminar to plan for product and related activities.

E8.6.2 Outline procedures for producing a line-production product and its related activities.

E8.2.3 Assign worker tasks to ensure the completion of production and related activities.

E8.6.4 Explain lines of authority and responsibility.

E8.6.5 Explain why accuracy is essential in industrial communications.

E8.6.6 Establish time schedules for production activities.

E8.6.7 Conduct industrial communications in writing.

CRITERION-REFERENCED MEASURE

C8.6 Production and presentation plans, prepared according to guidelines, to include:

(a) worker responsibilities
(b) time schedules
(c) outline of procedures

SELECTED INSTRUCTIONAL ACTIVITIES

1. Have officers conduct planning seminars (E8.6.1).
2. Use seminar to have students plan steps needed to produce products and related activities (E8.6.2).
3. Discuss students' production tasks and establish a line of authority (E8.6.3, E8.6.4).
4. Show students the importance of accurate communications (E8.6.5).
5. Help class to establish time schedules for all production activities (E8.6.6).
6. Read and evaluate all industrial communications (E8.6.7).

SELECTED TOOLS AND MATERIALS

Filmstrip projector
Overhead projector

SELECTED AUDIOVISUAL MATERIALS

Filmstrip: Obtaining Managerial Approval for Developed Products. Manufacturing Forum, Ball State University.

Transparencies: Hiring Pesonnel, Selection, and Seeking a Job (Appendix C)

SELECTED REFERENCES

Manufacturing. Fales, et al.
Manufacturing. Wright and Jensen.
What Is Communications? Industrial Education Instructional Materials Development Project.
World of Manufacturing. Industrial Arts Curriculum Project.

TASK INVENTORY FOR

9. ENGINEERING AND PRODUCING THE PRODUCT

CONTENT / CONCEPT AREAS

9.1 Design a line-production product

9.2 Tool up for the line production of a product

9.3 Produce line-production products

9.4 Distribute line-production products

9.5 Liquidate an enterprise

Application

CONTENT/CONCEPT

9. ENGINEERING AND PRODUCING THE PRODUCT

TASK/COMPETENCY

9.1 Design a line-production product

PROGRAM

INDUSTRIAL ARTS (21.0107)

COURSE

Modern Industry (8462/8463)

9.1

PERFORMANCE OBJECTIVE

P9.1 Given a class-selected line-production product, design the product. The design package must contain working drawings, a prototype or model, and test data, and must be rated acceptable according to instructor-prepared checklist.

SELECTED ENABLING OBJECTIVES

E9.1.1 List steps which are associated with product design, including making sketches and drawings, constructing models/mockups or prototypes, and conducting tests.

E9.1.2 Describe the use of patents, copyrights, and trademarks.

E9.1.3 Refine sketches of selected line-production product.

E9.1.4 Develop working drawings of a line-production product.

E9.1.5 Construct models, mockups, or prototypes of line-production product.

E9.1.6 Conduct tests to evaluate prototypes.

E9.1.7 Prepare marketing plans for line-production product.

CRITERION-REFERENCED MEASURE

C9.1 Instructor-prepared checklist, all items rated acceptable

SELECTED INSTRUCTIONAL ACTIVITIES

1. Have students observe a presentation on product design (E9.1.1).
2. Review the legal aspects of product design, including patent, copyrights, and trademarks (E9.1.2).
3. Help students develop working drawings of the product from refined sketches (E9.1.3, E9.1.4).
4. Assign students the construction of models, mockups, and prototypes of the product (E9.1.5).
5. Test prototypes for quality and efficiency to determine if redesigning is required prior to tooling up for production (E9.1.6).
6. Have marketing personnel print advertisements of product from prototype information (E9.1.7).

SELECTED TOOLS AND MATERIALS

Drafting instruments and supplies
Filmstrip projector
Instructor-prepared checklist to evaluate product design package
Model making tools and materials
Overhead projector

SELECTED AUDIOVISUAL MATERIALS

Filmstrip: Product Design. Manufacturing Forum, Ball State University.

Transparencies: "Suggested Product Designs." A Curriculum Manual for Manufacturing, Mid-America.

SELECTED REFERENCES

Exploring the Industries. Groneman and Grannis.
Introduction to Manufacturing. Jambro.
Manufacturing. Fales, et al.
Manufacturing. Wright and Jensen.
World of Manufacturing. Industrial Arts Curriculum Project.

Application

CONTENT/CONCEPT

9.2 ENGINEERING AND PRODUCING THE PRODUCT

PROGRAM

INDUSTRIAL ARTS (21.0107)

TASK/COMPETENCY

9.2 Tool up for the line production of a product

COURSE

Modern Industry (8462/8463)

9.2

PERFORMANCE OBJECTIVE

P9.2 Given a prototype of the product, tool up for the line production of the product. Tools for production must include the flowcharts, schedules, plant layouts, jigs and fixtures, and material and equipment requisitions, and must be judged workable during a trial production run.

SELECTED ENABLING OBJECTIVES

E9.2.1 Describe the events needed to tool up an industry.

E9.2.2 Divide products into component parts.

E9.2.3 Develop process flowcharts for selected line-production products.

E9.2.4 Establish schedules to determine component setup and production times.

E9.2.5 Lay out laboratory for efficient production.

E9.2.6 Design jigs and fixtures to assist in efficient production.

E9.2.7 Construct jigs and fixtures.

E9.2.8 Requisition needed equipment and materials.

E9.2.9 Assign workers to industrial occupations.

E9.2.10 Train workers for specific jobs.

E9.2.11 Construct quality-control testing devices.

E9.2.12 Conduct a trial run of the assembly line.

E9.2.13 Advertise and sell products.

E9.2.14 Design packages for production products.

CRITERION-REFERENCED MEASURE

C9.2 Trial production run, all production tools (including flowcharts, schedules, plant layouts, jigs and fixtures, and material and equipment requisitions) judged workable

SELECTED INSTRUCTIONAL ACTIVITIES

1. Present information on tooling up for production (E9.2.1).
2. Assemble products for students to see component parts (E9.2.2).
3. Explain flowcharts and schedules for the production and assembly of component parts (E9.2.3, E9.2.4).
4. Present information on jigs and fixtures (E9.2.6).
5. Help students to design, construct, and test jigs and fixtures (E9.2.6, E9.2.7).
6. Determine needed quantities of materials and equipment (E9.2.8).
7. Order production materials and equipment (E9.2.8).
8. Help managers assign and train workers (E9.2.9, E9.2.10).
9. Help students conduct a trial run (E9.2.12).
10. Modify production line for efficiency (E9.2.11, E9.2.12).
11. Assign marketing and sales personnel to take orders for line-production product (E9.2.13).
12. Present information on design product packages (E9.2.14).

SELECTED TOOLS AND MATERIALS

Film projector
Filmstrip projector
Fixture-holding devices
Laboratory tools and materials for constructing jigs, fixtures, and quality-control testing devices

SELECTED AUDIOVISUAL MATERIALS

Film: The Factory--How a Product is Made. BFA Educational Media.
What Is Automation? (12408). Audiovisual Services.

Filmstrip: Tooling Design. Manufacturing Forum, Ball State University.

SELECTED REFERENCES

Introduction to Manufacturing. Jambro.
Manufacturing. Fales, et al.
Manufacturing. Wright and Jensen.
World of Manufacturing. Industrial Arts Curriculum Project.

CONTENT / CONCEPT

9. ENGINEERING AND PRODUCING THE PRODUCT

TASK / COMPETENCY

9.3 Produce line-production products

PROGRAM

INDUSTRIAL ARTS (21.0107)

COURSE

Modern Industry (8462/8463)

9.3

PERFORMANCE OBJECTIVE

P9.3 Given a production line, tools, and pesonnel, produce a line-production product. The product must pass at least three quality checks and be a saleable item when finished.

SELECTED ENABLING OBJECTIVES

E9.3.1 Assemble materials and supplies for line production.

E9.3.2 Participate as workers on an assembly line.

E9.3.3 Process component parts.

E9.3.4 Check quality-control standards.

E9.3.5 Monitor line-production activities.

E9.3.6 Correct production-line problems.

E9.3.7 Assemble component parts.

E9.3.8 Finish line-production products.

E9.3.9 Package line-produced products.

E9.3.10 Inventory completed products.

CRITERION-REFERENCED MEASURE

C9.3 Production of line-production product, passing three quality checks and resulting in saleable product

SELECTED INSTRUCTIONAL ACTIVITIES

1. Prepare standard stock and store (E9.3.1).
2. Prepare work stations for line production (E9.3.2).
3. Conduct mass production run ensuring quality control standards (E9.3.3-E9.3.9).
4. Rotate employees to increase student experiences (E9.3.6).
5. Store projects and components (E9.3.10).
6. Have students clean up work stations and laboratory (E9.3.5).

SELECTED TOOLS AND MATERIALS

Filmstrip projector
Necessary laboratory machines, tools, and supplies

SELECTED AUDIOVISUAL MATERIALS

Filmstrips: Packaging. Manufacturing Forum, Ball State University.
Quality Control. Manufacturing Forum, Ball State University.

SELECTED REFERENCES

Introduction to Manufacturing. Jambro.
Manufacturing. Fales, et al.
Manufacturing. Wright and Jensen.
World of Manufacturing. Industrial Arts Curriculum Project.

Application

CONTENT / CONCEPT

9. ENGINEERING AND PRODUCING THE PRODUCT

PROGRAM

INDUSTRIAL ARTS (21.0107)

TASK / COMPETENCY

9.4 Distribute line-production products

COURSE

Modern Industry (8462/8463)

9.4

PERFORMANCE OBJECTIVE

P9.4 Given line-produced products, distribute the products, using advertising, selling, and delivery activities. All products must be accounted for, a system must be used to record sales data, and all calculations must be 100% accurate.

SELECTED ENABLING OBJECTIVES

E9.4.1 Conduct marketing campaign.

E9.4.2 Sell mass-produced products.

E9.4.3 Distribute products.

CRITERION-REFERENCED MEASURE

C9.4 Distribution of line-produced products, with all products accounted for, all sales data recorded, and all calculations 100% accurate

SELECTED INSTRUCTIONAL ACTIVITIES

1. Assist students in setting up a sales booth in the school or at a shopping center (E9.4.1).
2. Have students sell products or fill previous orders (E9.4.2).
3. Have students deliver products to customers (E9.4.3).

SELECTED TOOLS AND MATERIALS

Filmstrip projector
Graphic reproduction machines available in facility
Handbills advertising products (student-prepared)
Ledger
Mass-produced products
Movie projector
Order and sales slips

SELECTED AUDIOVISUAL MATERIALS

Films: Buy, Buy (41010). Audiovisual Services.
Professional Selling Practices (51805). Audiovisual Services.

Filmstrips: Developing A Marketing System. Manufacturing Forum, Ball State University.

SELECTED REFERENCES

Manufacturing. Fales, et al.
Manufacturing. Wright and Jensen.
Introduction to Manufacturing. Jambro.
World of Manufacturing. Industrial Arts Curriculum Project.

Application

CONTENT / CONCEPT

9. ENGINEERING AND PRODUCING THE PRODUCT

PROGRAM

INDUSTRIAL ARTS (21.0107)

TASK / COMPETENCY

9.5 Liquidate an enterprise

COURSE

Modern Industry (8462/8463)

9.5

PERFORMANCE OBJECTIVE

P9.5 Given established procedures, follow the steps to liquidate the class enterprise. All bills must be paid, all dividends calculated and paid, and a statement of profit, loss, and closure issued. All calculations must be 100% accurate, based on instructor audit of liquidation reports.

SELECTED ENABLING OBJECTIVES

E9.5.1 List steps required to liquidate a company.

E9.5.2 Pay all bills.

E9.5.3 Calculate stock dividends.

E9.5.4 Pay all dividends.

E9.5.5 Close out financial records.

CRITERION-REFERENCED MEASURE

C9.5 Liquidation reports, all calculations 100% accurate according to instructor audit

SELECTED INSTRUCTIONAL ACTIVITIES

1. Conduct a presentation on liquidating an enterprise (E9.5.1).
2. Have accounting director pay all bills (E9.5.2).
3. Have board of directors calculate stock dividends (E9.5.3).
4. Have accounting director pay all stockholder dividends (E9.5.4)
5. Have accounting director close out financial records for audit by board of directors and instructor (E9.5.5).
6. Have class close company (E9.5.1-E9.5.5).

SELECTED TOOLS AND MATERIALS

Ledger book
Report forms

SELECTED AUDIOVISUAL MATERIALS

None identified

SELECTED REFERENCES

Manufacturing. Fales, et al.
World of Manufacturing. Industrial Arts Curriculum Project.
Introduction to Manufacturing. Jambro.
A Curriculum Manual for Manufacturing. Mid America.

TASK INVENTORY
FOR

10. PRESENTING INFORMATION THROUGH SEMINARS

CONTENT/CONCEPT AREAS

10.1 Prepare written and oral presentations on line-produ

10.2 Assemble a display of line-production activities

10.3 Compile a report of line-production company

10.4 Describe the effects that line-production indust societies

10.5 Participate with other students in competitive even

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OR

UGH SEMINARS, REPORTS, AND DISPLAYS

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CONTENT/CONCEPT

10. PRESENTING INFORMATION THROUGH SEMINARS, REPORTS, AND DISPLAYS

PROGRAM

INDUSTRIAL ARTS (21.0107)

TASK/COMPETENCY

10.1 Prepare written and oral presentations on line-production activities

COURSE

Modern Industry (8462/8463)

10.1

PERFORMANCE OBJECTIVE

P10.1 Given class line-production activities, prepare written and oral presentation reports that describe the line-production experience. The report must contain a cover page, preface, table of contents, personnel activities, production activities, summation, bibliography, and resources, and be rated acceptable according to instructor-prepared checklist.

SELECTED ENABLING OBJECTIVES

E10.1.1 List and describe contents of individual reports on line production.

E10.1.2 Write individual reports.

E10.1.3 Discuss qualities of exemplary group reports.

E10.1.4 Compile the group report, including component sections.

E10.1.5 Select, reproduce, and mount graphic samples for group report.

E10.1.6 Acquire booklets on line-production from industry.

E10.1.7 Produce photographs, slides, or transparencies for presentations on line-production industries.

E10.1.8 Prepare to present the publication with visuals to the public.

CRITERION-REFERENCED MEASURE

C10.1 Written and oral reports on line-production activities, all items rated acceptable according to instructor-prepared checklist

SELECTED INSTRUCTIONAL ACTIVITIES

1. Have students discuss teacher-prepared checklist for contents of individual and group presentations (E10.1.1, E10.1.3).
2. Help students write individual and group reports (E10.1.2, E10.1.4).
3. Demonstrate photography and slide preparation for reports and presentations (E10.1.5, E10.1.7).
4. Assign students to write to industry for literature on line-production (E10.1.6).
5. Have class officers and public relations committee invite public to presentation on line-production activities (E10.1.8).

SELECTED TOOLS AND MATERIALS

Cameras and photo supplies
Copying machines and supplies
Drawing instruments and supplies
Dry mount press
Handout 3: Line Production Report (Appendix C)
Instructor-prepared checklist
Videotape player and monitor

SELECTED AUDIOVISUAL MATERIALS

Videotape: Industrial Arts for the '70s, Lesson 22--If You Can't Write, Call Right (31290). Audiovisual Services.
Using Your Library. Education Dimensions Group.

SELECTED REFERENCES

Graphic Communications. Broekhuizen.
The Maryland Plan. Maley.

Application

CONTENT/CONCEPT

10. PRESENTING INFORMATION THROUGH SEMINARS, REPORTS, AND DISPLAYS

PROGRAM

INDUSTRIAL ARTS (21.0107)

TASK/COMPETENCY

10.2 Assemble a display of line-production activities

COURSE

Modern Industry (8462/8463)

10.2

PERFORMANCE OBJECTIVE

P10.2 Given line-produced products, written reports, visuals, fixtures, tools, and materials, assemble a display to show the school and community the results of the enterprise. Display must be self-explanatory and placed in public view, and all components must be rated acceptable according to criteria presented in class.

SELECTED ENABLING OBJECTIVES

E10.2.1 Outline standards for the assembly of a group display.

E10.2.2 Describe qualities of exemplary line-production displays.

E10.2.3 Design an exhibit for a line-production display.

E10.2.4 Prepare graphics for the group display.

E10.2.5 Select fixtures and tools for display.

E10.2.6 Select materials for display, such as organizational chart and samples of subassemblies.

CRITERION-REFERENCED MEASURE

C10.2 Self-explanatory public display on line-production activities, all components rated acceptable according to criteria presented in class

SELECTED INSTRUCTIONAL ACTIVITIES

1. Discuss the design of a display for the activities of the line-production industry, including criteria for evaluation (E10.2.1, E10.2.2).
2. Have a committee design a display module (E10.2.3).
3. Have class list items to be used in display (E10.2.3).
4. Have students make drawings and letter signs for the display layout (E10.2.3).
5. Suggest which tools and fixtures would be good in display (E10.2.5).
6. Help students locate materials needed for display (E10.2.6).

SELECTED TOOLS AND MATERIALS

Graphic reproduction tools and supplies
Selected laboratory supplies and equipment
Sign-making tools and supplies

SELECTED AUDIOVISUAL MATERIALS

None identified

SELECTED REFERENCES

None identified

Application

CONTENT/CONCEPT

10. PRESENTING INFORMATION THROUGH SEMINARS, REPORTS, AND DISPLAYS

PROGRAM

INDUSTRIAL ARTS (21.0107)

TASK/COMPETENCY

10.3 Compile a report of line-production company

COURSE

Modern Industry (8462/8463)

10.3

PERFORMANCE OBJECTIVE

P10.3 Given instructor specifications and individual reports, compile a group report about the line-production company, using graphics, flowcharts, profit and loss data, working drawings, and summary. All components of the report must meet instructor specifications.

SELECTED ENABLING OBJECTIVES

E10.3.1 Establish criteria for the contents of a line-production publication.

E10.3.2 Edit copy for a line-production publication.

E10.3.3 Draw graphics for a line-production publication.

E10.3.4 Prepare copy, using a typewriter.

E10.3.5 Lay out a line-production organizational chart.

E10.3.6 Select graphic reproduction methods for line-production publication.

E10.3.7 Reproduce line-production publications.

CRITERION-REFERENCED MEASURE

C10.3 Group report, meeting instructor's specifications, to include:
(a) graphics
(b) flowcharts
(c) profit and loss data
(d) working drawings
(e) summary

SELECTED INSTRUCTIONAL ACTIVITIES

1. Have class decide on contents for the line-production publication (E10.3.1).
2. Help students write copy about line-prodution activities (E10.3.2).
3. Demonstrate graphics techniques (E10.3.3).
4. Assign students to type copy (E10.3.4).
5. Demonstrate layout techniques for publication (E10.3.5).
6. Help students reproduce line-production publication (E10.3.6, E10.3.7).

SELECTED TOOLS AND MATERIALS

Ditto machine and supplies
Drafting instruments and supplies
Graphic layout tools and supplies
Instructor-prepared written specifications for group report
Offset press and supplies
Photocopy machine
Videotape player and monitor

SELECTED AUDIOVISUAL MATERIALS

Videotape: Industrial Arts for the'70s, Lesson 9--Print It Like It Is (28890). Audiovisual Services.

SELECTED REFERENCES

Graphic Communications. Broekhuizen.
Graphic Arts Technology. Karsnitz.

Application

CONTENT/CONCEPT

10. PRESENTING INFORMATION THROUGH SEMINARS, REPORTS, AND DISPLAYS

PROGRAM

INDUSTRIAL ARTS (21.0107)

TASK/COMPETENCY

10.4 Describe the effects that line-production industries have had on people and societies

COURSE

Modern Industry (8462/8463)

10.4

PERFORMANCE OBJECTIVE

P10.4 Given line-production experiences and related presentations, describe the effects of line-production industries on people and societies throughout history. Description should be presented during class seminar and must include information on the Industrial Revolution, employment opportunities, and productivity, and must be accurate according to references provided.

SELECTED ENABLING OBJECTIVES

E10.4.1 List the advantages and disadvantages of line-production industries for workers.

E10.4.2 Describe the effects that line-production industries had on early America.

E10.4.3 Explain the value of production activities for students.

CRITERION-REFERENCED MEASURE

C10.4 Descriptive report on effects of line-production industries presented during class seminar, accurate according to references provided, to include information on the Industrial Revolution, employment opportunities, and productivity

SELECTED INSTRUCTIONAL ACTIVITIES

1. Have students read text and reference books about assembly line and mass production (E10.4.1).
2. Show and conduct discussion on film about the Industrial Revolution (E10.4.2).
3. Let class invite speaker to discuss factory employment and industrial productivity (E10.4.2).
4. Have students discuss what they believe to be the most important skills or aspects of knowledge gained from their study of line-production industries (E10.4.3).

SELECTED TOOLS AND MATERIALS

Materials and supplies needed for class seminars
Film projector

SELECTED AUDIOVISUAL MATERIALS

Film: Your Chance to Live--Technological Failures (27709). Audiovisual Services.

Line-production exhibit

SELECTED REFERENCES

Technology: An Introduction. DeVore.
Technology, Change, and Society. Pytlik, et al.

Application

CONTENT/CONCEPT

10. PRESENTING INFORMATION THROUGH SEMINARS, REPORTS, AND DISPLAYS

PROGRAM

INDUSTRIAL ARTS (21.0107)

TASK/COMPETENCY

10.5 Participate with other students in competitive events

COURSE

Modern Industry (8462/8463)

10.5

PERFORMANCE OBJECTIVE

P10.5 Given the necessary rules and registration information, participate with other students in the American Enterprise Contest. Entry must contain two line-production products, drawings, organizational and production charts, and financial reports, in accordance with AIASA standards.

SELECTED ENABLING OBJECTIVES

E10.5.1 Discuss the duties of a Recognition Committee.

E10.5.2 Discuss or revise the awards system for class.

E10.5.3 Explain the procedure for registering class for American Enterprise Contest at regional fairs or Spring Festival.

E10.5.4 Describe the procedures for organizing the class for open house to display production activities.

E10.5.5 Discuss rules and need for oral presentation in American Enterprise Contest.

CRITERION-REFERENCED MEASURE

C10.5 American Enterprise Contest entry in accordance with AIASA standards

SELECTED INSTRUCTIONAL ACTIVITIES

1. Have a discussion of duties of an in-class Recognition Committee (E10.5.1).
2. Have a discussion of an awards system as outlined in the AIASA Guide 2 (E10.5.2).
3. Have a discussion of the procedure for registering for regional fair or the Spring Festival (E10.5.3).
4. Have a discussion of the procedures for organizing the class for open house and display of production activities (E10.5.4).
5. Distribute copies of rules for American Enterprise Contest (E10.5.5).

SELECTED TOOLS AND MATERIALS

Chalkboard and chalk
Handout: Rules for "American Enterprise Contest" from AIASA Guide 6.

SELECTED AUDIOVISUAL MATERIALS

Pictures of past Spring Festival participation (instructor-provided)

SELECTED REFERENCES

Annual Program of AIASA Activities, Guide 5. Virginia Department of Education.
Standards for AIASA Events, Guide 6. Virginia Department of Education.

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How to Build Dioramas. Clinton, New Jersey: Micro-Mark.

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Industrial Arts Curriculum Project. The World of Manufacturing. Bloomington, Illinois: McKnight Publishing Company, 1971.

Industrial Directory of Virginia. Richmond: Virginia State Chamber of Commerce.

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Karsnitz, John R. Graphic Arts Technology. Albany, New York: Delmar Publishers, Inc., 1984.

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Maley, Donald A. The Industrial Arts Teacher's Handbook. Boston: Allyn and Bacon, 1978.

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Manufacturing in Virginia. Richmond: Virginia Division of Industrial Development.

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Organizing an Industry. Menomonie, Wisconsin: The American Industry Project, 1966. (booklet)

Organizing the Industrial Arts Student Association, Guide 1. Richmond: Virginia Department of Education, 1978.

Pytlik, Lauda, and Johnson. Technology, Change, and Society. Worcester, Massachusetts: Davis Publications, Inc., 1978.

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Robertson, Field, and Hosterman. A Curriculum Manual for Manufacturing. Santa Fe: Mid-America Vocational Curriculum Consortium, New Mexico Department of Education, 1977.

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Smith and Hoppe. Building to Scale. Boise, Idaho: Small Sales Company.

Standards for AIASA Events, Guide 6. Richmond: Virginia Department of Education. 1982.

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Wallach. The Basic Book of Drafting. Alsip, Illinois: American Tech, 1979.

What Is Communications? Menomonie, Wisconsin: The Industrial Education Instructional Materials Development Project, 1974.

Wright and Jensen. Manufacturing. South Holland, Illinois: Godheart-Willcox Company, Inc., 1976.

APPENDICES

A. Information and Resources

B. Instructional Materials for Study of Process/Project Industries

C. Instructional Materials for Study of Line-Production Industries

APPENDIX A

INFORMATION AND RESOURCES

I. Additional Books About Process/Project Industries

II. Additional Films About Process/Project Industries

III. Additional Books About Line Production

IV. Additional Films About Line Production

V. Booklets and Pamphlets for Study of Contemporary Industry

VI. Field Trip Resources

VII. Resources for Career Decision-Making

VIII. Resources for Safety Education

IX. TV Resources

X. Addresses for AV Suppliers, Corporations, Agencies, and Associations

I. Additional Books About Process/Project Industries

A. General

Clark, Donald. The Encyclopedia of How It's Made. New York: A&W Publishers, Inc., 1978.

Fabre, Maurice. A History of Communications. New York: Hawthorne Books, Inc., 1968.

Lodowijk, T., et al. The Way Things Work, Volumes 1 and 2. New York: Simon and Schuster, Inc. 1967/1971.

Reichen, Charles-Albert. A History of Physics. New York: Hawthorne Books, Inc., 1968.

Souland, Robert. A History of the Machine. New York: Hawthorne Books, Inc., 1968.

B. Communications

Berger, Melvin. Those Amazing Computers! New York: The John Day Company, 1973.

Gregor, Arthur. Bell Laboratories. New York: Charles Scribner, 1972.

Halacy, D. S., Jr. What Makes a Computer Work? Boston: Little, Brown and Company, 1973.

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Hilbrink, W. R. Who Really Invented Radio? New York: G. P. Putnam, 1972.

Hobson, et al. Film Animation as a Hobby. New York: Sterling Publishing Co., 1975.

Holland, Viki. How to Photograph Your World. New York: Charles Scribner, 1974.

Klein, Aaron. The Electron Microscope: A Tool of Discovery. New York: McGraw-Hill Book Company, 1974.

McCaig, Robert. Electronic Power in America. New York: G. P. Putnam, 1979.

Morgan, Alfred. The Boys' Fourth Book of Radio and Electronics. New York: Charles Scribner, 1969.

O'Connor, Jerome. The Telephone, How it Works. New York: G. P. Putnam, 1972.

Scaffert, Arthur. Computers. New York: Coward, McCann, and Geoghegan, Inc., 1972.

Spector, Majorie. Pencil to Press, How This Book Came To Be. New York: Lothrop, Lee & Shepard Company, 1975.

I. B. Stabler, Irwin. The World of Microelectronics. New York: W. W. Norton and Company, Inc., 1969.

Weiss, Harvey. How to Make Your Own Movies. Reading, Massachusetts: Young Scott Books, 1973.

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Drummond, A. H., Jr. The Population Puzzle. Addison-Wesley Publishing Company, Inc., 1973.

Goldin, Augusta. Let's Go to Build a Skyscraper. New York: G. P. Putnam, 1974.

Halacy, D. S., Jr. Your City Tomorrow. New York: Four Winds Press, 1973.

Hellman, Hal. The City in the World of the Future. New York: Lippincott.

Howell, Ruth. The Dome People. Hartford: Connecticut Printers, Inc., 1974.

Hoyle, Geoffrey. Living In The Future. New York: Parents' Magazine Press, 1973.

Kampmann, Lothar. Creating with Space and Construction. New York: Van Nostrand Reinhold Company, 1973.

Michelsohn, David Reuben. The Cities in Tomorrow's World, Challenge to Urban Survival. New York: Simons & Schuster, Inc., 1973.

Michelsohn, David Reuben. Housing In Tomorrow's World. New York: Julian Messner, 1973.

Munzer, Martha E., and Vogel, John, Jr. New Towns, Building Cities from Scratch. New York: Alfred A. Knopf, 1974.

Oppenheim, Joanne. Have You Seen Houses? Reading, Massachusetts: Addison-Wesley Company, Inc. 1973.

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Poling, James. The Story of Tools, How They Built Our World and Shaped Man's Life. New York: W.W. Norton & Company, Inc., 1969.

Schwartz, Alvin. Central City/Spread City. New York: MacMillan Publishing Company, Inc., 1973.

I. D. Energy

Chaffin, Lillie. Energy & Crisis. New York: Harvey House, 1974.

Dwiggins, Don. The Search for Energy. Chicago: Children's Press, 1974.

Ellis, R. Hobart, Jr. Knowing the Atomic Nucleus. New York: Lothrop, Lee & Shepard Company, 1973.

Knight, David C. Harnessing the Sun, The Story of Solar Energy. New York: William Morrow and Company, 1976.

Knowles, Ruth Sheldon. America's Oil Famine. New York: Coward, McCann & Geoghegan, Inc., 1975.

Lefkowitz, R. J. Fuel for Today and Tomorrow. New York: Parent's Magazine Press, 1974.

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Michelsohn, David Reuben. Atomic Energy for Human Needs. New York: Julian Messner, 1973.

Wacker, Charles, Jr. LASER: How They Work. New York: G. P. Putnam, 1973.

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E. Production

Allen, Dorothy J. The Story of Trees. New York, G. P. Putnam, 1974.

Brooks, Anita. The Picture Book of Metals. New York: The John Day Company, 1972.

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I. E.

Kerns, Roger R. Simplicity of Water Purification. Philadelphia: Dorrance & Company, 1972.

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Newcomb and Kenny. Miracle Glass. G. P. Putnam, 1967.

Schwartz, Julius. It's Fun to Know Why. New York: McGraw-Hill Book Company, 1973.

F. Transportation

Beazer, William F., et al. U.S. Shipbuilding in the 1970s. Lexington Books, 1972.

Bergaust, Erik. The Next 50 Years on the Moon. New York: G. P. Putnam, 1974.

Bray, Peter, and Brown, Barbara. Transport Through the Ages. New York: Taplinger Publishing Company, Inc.

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Cooke, Donald. How Automobiles Are Made. Dodd, 1965.

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Hey, Nigel S. How We Will Explore the Outer Planets. New York: G. P. Putnam, 1973.

Jacobs, Lou, Jr. Space Station '80. Hawthorne Books, Inc., 1973.

The Kennedy Space Center Story. Public Affairs Office, Kennedy Space Center, Florida, 1974.

I. F. Knight, David C. From Log Roller to Lunar Rover: The Story of Wheels. New York: Parent's Magazine Press, 1974.

Lawrie, Robin. Ready for Take-Off, How an Airplane Flies and How It Is Flown. New York: Pantheon Books, 1973.

Limburg, Peter R., and Sweeney, James B. Vessels for Underwater Exploration. New York: Crown Publishers, Inc., 1973.

Moore, Patrick. The Next Fifty Years in Space. New York: Taplinger Publishing Company, 1976.

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Shenfeld, Gary. Famous Firsts In Space. New York: G. P. Putnam, 1972.

Sobel and Sarnoff. The Automobile Makers. G. P. Putnam, 1969.

Stoiko, Michael. Pioneers of Rocketry. New York: Hawthorne Books, Inc., 1974.

Ward, Ralph T. Ships Through History. New York: The Bobbs-Merrill Company, Inc., 1973.

II. Additional Films About Process/Project Industries

A Car Is Born. Ford Motor Company.

A Few Essentials, No. 3372. Modern Talking Picture Service.

A Funny Thing Happened on the Way to the Gas Station. Exxon Corporation.

Aluminum--An Element of Change. Aluminum Association.

An American Asset, No. 30680. Modern Talking Picture Service.

Automation: The Next Revolution. Contemporary/McGraw-Hill Films.

Bamboo. BFA Educational Media.

Challenge to Transportation, No. 20133. Modern Talking Picture Service.

Computers in Your Life, No. 15978. Modern Talking Picture Service.

Diesel . . . The Story of an Engine, No. 12622. Modern Talking Picture Service.

Drama of Metal Forming. Shell Film Library.

Energy for the 80s, No. 31805. Modern Talking Picture Service.

Food, Clothing and Shelter, No. 20134. Modern Talking Picture Service.

Freedom Through Mobility, No. 12662. Modern Talking Picture Service.

The House Recycling Built. Reynolds Metals Company.

Information . . . Handle with Care, No. 16130. Modern Talking Picture Service.

Jets and Rockets. Coronet Instructional Films.

Liquid Natural Gas. Brooklyn Union Gas.

Lumber for Homes. Encyclopedia Britannica Educational Corporation.

Modern Steel Making, No. SU-133. United States Steel.

Nuclear Energy: A Perspective, No. 15991. Modern Talking Picture Service.

Paint. Shell Film Library.

Pipeline, No. 12874. Modern Talking Picture Service.

Plastics, The World of Imagination, No. 16132. Modern Talking Picture Service.

Recycling: A Way of Life, No. 15303. Modern Talking Picture Service.

Refinery. Exxon Corporation.

Refinery Process. Shell Film Library.

Research in Steel, No. SU-635. United States Steel.

Rockets, How They Work. Encyclopedia Britannica Educational Corporation.

Rubber by Design. Shell Film Library.

Story of Sugar. Encyclopedia Britannica Educational Corporation.

Sun Maid--World's Favorite Raisin. Sun Maid Growers of California.

The Energy Experience, No. 16105. Modern Talking Picture Service.

The Great American Chocolate Factory, No. 31700. Modern Talking Picture Service.

The Housewares Story, No. 30408. Modern Talking Picture Service.

The Last Drop, No. 12665. Modern Talking Picture Service.

The Link Between Us . . . Electronics, No. 12830. Modern Talking Picture Service.

The Making, Shaping, and Treating of Steel, No. SU-975. United States Steel.

What's So Special About Paper. American Paper Institute.

Within This Earth. American Mining Congress.

Windows in Time: Research Today for Energy Tomorrow, No. 15980. Modern Picture Talking Picture Service.

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Gerbract, Carl, and Robinson, Frank. Understanding America's Industries. Bloomington, Illinois: McKnight Publishing Company, 1962.

Lux and Ray. World of Manufacturing. Bloomington, Illinois: McKnight Publishing Company, 1972.

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A Heritage of Innovation, No. 16304. Modern Talking Picture Service.

A Time of Challenge, No. 20405. Modern Talking Picture Service.

Everybody's Job, No. 15807. Modern Talking Picture Service.

Industries of the Future. Contemporary/McGraw-Hill Films.

Man and the Second Industrial Revolution. Contemporary/McGraw-Hill Films.

Marketing and Distribution. Xerox Films.

One Hoe For Kalabo, No. 4663. Modern Talking Picture Service.

Pushing the Limits--An IBM Technology Report, No. 10978. Modern Talking Picture Service.

The Challenge of Manufacturing, No. 16397. Modern Talking Picture Service.

The Honda Way, No. 16416. Modern Talking Picture Service.

The Innovators, No. 11948. Modern Talking Picture Service.

The Pursuit of Profit. Proctor & Gamble.

The Story of Productivity. Do All Machine Company.

Transparency Masters. The Manufacturing Forum, Ball State University.

The Workmanship Myth, No. 31446. Modern Talking Picture Service.

We Want Goods and Services. BARR Films.

What Is a Company? Tupperware Company.

What's in a Name? Manufacturing Forum, Ball State University.

V. Booklets and Pamphlets for Study of Contemporary Industry

A. ABC's of American Industry, Niagara Falls, NY 14305

1. The History of Manned Space Flight (Dept. T)
2. The Magic World of Petrochemicals (Dept. P)
3. The Miracle of Rubber (Dept. G)
4. The Story of Aluminum (Alminum Association)
5. The Story of Oil and Gas (Dept. P)

B. Allegheny Ludlum Stainless Steel, Mellon Square, Pittsburgh, PA 15222

Allegheny Ludlum Stainless Steel.

C. Aluminum Company of America, 1501 Alcoa Building, Pittsburgh, PA 15219

Aluminum by Alcoa

D. American Industry Project, University of Wisconsin, Menomonee, WI

1. Operating an Industry
2. Organizing an Industry
3. Student Industry

E. The Automobile Manufacturers Association, Inc., 320 New Center Building, Detroit, MI 48202

Quest: What Does It Take to Make Your Car?

F. Aviation Education, Federal Aviation Administration, Office of General Aviation Affairs, Department of Transportation, Washington, DC 20590

Transport Technology: The Decade Ahead

G. Bell Telephone Laboratories, Public Affairs Office, 600 Mountain Avenue, Murray Hill, NJ 07974

1. Machine Talk
2. The Magic of Your Telephone

H. Chicago Bridge and Iron Company, Oak Brook, IL 60521

Chicago Bridge and Iron Company

V. I. Department of Labor and Industry, P.O. Box 1814, Richmond, VA 23214

The Right to Work Law in Virginia

J. Division of Industrial Development, 1010 State Office Building, Richmond, VA 23219

Manufacturing in Virginia

K. Division of Securities and Retail Franchising, 1300 Travelers Building, Richmond, VA 23219

Trade Marks, Service Marks

L. The Do-All Company, 254 N. Laurel Avenue, Des Plains, IL

Productivity--Creates Economical Growth (Industrial Revolution chart)

M. Executive Planning, Inc., 2549 Asbury Road, Farmington, NJ 07727

The Visual Organizer

N. Ford Educational Affairs Department, The American Road, Dearborn, MI 48121

1. A Car Is Born
2. The Evolution of Mass Production

O. General Motors Corporation, Public Relations Staff, Room 101, G.M. Building, Detroit, MI 48202.

The Automobile Story: A Better Way

P. Goodyear Atomic Corporation, P.O. Box 628, Piketon, OH 45661

Goodyear Atomic

Q. International Harvester, Box 733 Dept. ABC, Chicago, IL 60680

American Farmer: Businessman and Conservationist

R. Lynchburg Foundry, Drawer 411, Lynchburg, VA 24505

Lynchburg Foundry

S. Methods Research Corporation, 105 Willow Avenue, Staten Island, NY

Magnetic Control

T. The Morgan Sign Company, 4510 N. Ravenwood Avenue, Chicago, IL 60640

Line-O-Scribe Sign Machine

U. NASA Langley Research Center, Langley Station, Public Affairs Office, Mail Stop 154, Hampton, VA 23365

Birthplace of the Future

V. National Machine Tool Builders Association, 2139 Wisconsin Avenue, N.W., Washington, DC 20007

Machine Tools Today

V. W. Newport News Shipbuilding, Public Relations Dept., Newport News, VA 23607.

1. Into Tomorrow
2. Newport News Shipbuilding: Where Tomorrow Is Now

X. Norfolk Shipbuilding and Drydock, P.O. Box 2100, Norfolk, VA 23501.

Norfolk Ship: Repair, Construction, Conversion

Y. Pitsco, Inc., Box 26, Pittsburg, KS 66762

A Study of Industry

Z. Research Coordinating Unit--MSU, P.O. Drawer DX, Mississippi State, MS 39762.

Experiencing the Free Enterprise System Through Industrial Arts

AA. State Corporation Commission, Office of the Clerk, Box 1197, Richmond, VA 23209.

Methods and Costs of Incorporating in Virginia

BB. Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402

New Horizons (NASA publication)

CC. Virginia Employment Commission, 703 E. Main Street, Richmond, VA 23214

Wage Rates for Selected Occupations

VI. Field Trips for Study of Contemporary Industry

One of the best resources for studying and using the line-production method is to visit an industry in the community. Seeing how the product is made is more important than what the product is or the materials used. Many school divisions have guides to community resources,or the following can be used for reference.

A. Industrial Directory of Virginia
Virginia State Chamber of Commerce
611 East Franklin Street
Richmond, Virginia 23219

B. Local City, County, or Regional Directory of Business or Industry. Contact your local Chamber of Commerce or Board of Supervisors for listings.

C. Virginia Industrial Tours (a listing of 70 tours) . . .
Virginia Chamber of Commerce
Travel Development Department
611 East Franklin Street
Richmond, Virginia 23219

VII. Resources for Career Decision-Making

This section is provided so that career information is offered in all units of instruction. Books, as well as booklets, are suggested for reference. Films dealing with careers are included in Sections II and IV of this appendix.

A. Books

Career Index. An annual compilation with Quarterly Supplements by Chronical Guidance Publications, Inc., Maravia, NY 13118.

Educator's Guide to Guidance Materials. Editions published annually by the Educator's Progress Service, Inc., Randolph, WI 53926.

Encyclopedia of Careers & Vocational Guidance, Vol. I, Planning Your Career, and Vol. II, Careers & Occupations. Ferguson Publishing Company, Chicago, IL 60611.

My Career Guidebook. Belma & Shertger, Beverly Hills, CA 90213. 1964.

Occupational Outlook Handbook. Published every 2 years by the U.S. Department of Labor, Bureau of Labor Statistics, and can be purchased from the U.S. Government Printing Office, Washington, DC 20402.

B. Booklets

After High School--What? Scriptograph booklet, Channing L. Bete Co., Inc., Greenfield, MA 01301.

Apprenticeship, The Road to Success. Apprenticeship Information Center, Virginia Employment Commission, 904 Granby Street, Norfolk, VA 23501.

Automobile Engineering. Society of Automotive Engineers, 2 Pennsylvania Plaza, New York, NY 10001.

Aviation, Where Career Opportunities Are Bright. U.S. Office of Education, Federal Aviation Administration, National Aerospace Education Council.

Become a Refrigeration and Air-Conditioning Service Engineer. Refrigeration Service Engineers Society, 2720 Des Plaines Avenue, Des Plaines, IL 60018.

Build A Better Life: Try the Building Trades. Manpower Developing and Training Department, National Association of Home Builders, 15th & M Streets, N.W., Washington, DC 20005.

Can I Be A Draftsman? Public Relations Staff, General Motors, Detroit, MI 48232.

Career Posters & Booklets. General Electric, Department W.P., Lexington Avenue, New York, NY 10022.

Career Presentations & Booklets. Kodak Materials for Visual Communication Education and Training, Department 454, Rochester, NY 14650.

VII. B. Careers in Graphic Communications. Education Council, Graphic Arts Industry, Inc., 4615 Forbes Avenue, Pittsburg, PA 15213.

Careers in Meeting the Energy Crises. Federal Power Commission, 825 North Capitol Street, N.E., Washington, DC 20426.

Discovering Your Real Interests, series by Blanche B. Paulson. Science Research Associates, Inc., 259 East Erie Street, Chicago, IL 60611.

The Electronics Service Technician. Electronic Industry Association, 2001 Eye Street, N.W., Washington, DC 20040.

Facing Facts About Preparing for Your Future. Prudential, Box 36, Newark, NJ 07101.

Focus on Furniture by Jane Hudson. Southern Furniture Manufacturers Association, High Point, NC 27260.

Ford Careers. Ford Education Affairs Department, The American Road, Dearborn, MI 48120.

Graphic Communications. Addressograph Multigraph Division, 1800 West Central Road, Mt. Prospect, IL 60056.

Is Graphic Arts the Career for You? Education Council of the Graphic Arts Industry, Inc., Graphic Arts Technical Center, 4615 Forbes Avenue, Pittsburg, PA 15213.

Opportunities in the Welding Industry. American Welding Society, 345 East 17th Street, New York, NY 10012.

Seven Steps to a Career in Space Science and Technology. National Aeronautics and Space Administration, U.S. Government Printing Office, Washington, DC 20402.

Shop Talk About The Printing Trade. Division of Apprenticeship, Virginia Department of Labor and Industry, P.O. Box 1814, Richmond, VA 23219.

T. V. & Radio Repairer and other large brochures. Harcourt, Brace & Jovanovich, Inc., 1975.

Women Engineers. Engineers Council for Professional Development, 345 East 17th Street, New York, NY 10017.

Your Career in Fluid Power. Fluid Power Foundation, Inc., 600 Old Country Road, Garden City, NY 11530.

Your Future in Aerospace. American Institute of Aeronautics and Astronautics, 1290 Sith Avenue, New York, NY 10019.

Your Future in Photography by Victor Keppler. Arco-Rosen Career Guidance Services, 219 Park Avenue, South, New York, NY 10003.

VII. C. Magazines

Career World. Curriculum Innovations, Inc., 501 Lake Forest Avenue, Highwood, IL 60046.

Occupational Outlook Quarterly. U.S. Department of Labor, Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402.

VIII. Resources for Safety Education

A. Films

1. Audiovisual Services, Department of Education, P.O. Box 6 Q, Richmond, VA 23216

   a. Electrical Safety From A to Zap (04909)
   b. Electricity: Handle With Care (36708)
   c. Playing It Safe With Power Tools (06010)
   d. Safety in the Shop--Basic Practices (37310)
   e. Safety in the Shop--Hand Tools (37210)
   f. Safety in the Shop--Power Tools (37010)
   g. School Shop Safety (20609)
   h. We'll See Tomorrow (52006)

2. Industrial Safety Division, Virginia Department of Labor, P.O. Box 1814, Richmond, VA 23214

   (Request catalog)

B. Filmstrips or Slides/Cassette

1. Abraxas Films, P.O. Box 186, Capitola, CA 95010

   a. Hand Tool Safety (with tests--#1B2)
   b. Introduction to Safety (with tests--#1B1)
   c. Power Engine Safety (#1B3)
   d. Scroll Saw Safety (#1B9)

2. General Motors Management and Organizational Development Department, 1700 W. Third Avenue, Flint, MI 48502-2276

   Safety Matters series

3. Library Filmstrip Company, 3033 Aloma, Wichita, KS 67211

   General Shop Safety (1 filmstrip and cassette)

4. Prentice Hall Media, 150 White Plains Road, Tarrytown, NY 10591

   Safety at Work series (10 filmstrips and cassettes)

C. Transparencies

Milliken Publishing Company, 1100 Research Boulevard, St. Louis, MO 63132

Shop and Home Safety (#TDTZ0)

D. Booklets

1. AAVIM, 120 Engineering Center, Athens, GA 30602

   Developing Shop Safety Skills (booklet, slides, and teacher's guide--#903 SW, #903 AV)

VIII. D. 2. American Vocational Association, 2020 N. 14th Street, Arlington, VA 22201

Let's Teach Safety (#10480)

3. National Safety Council, 444 N. Michigan Avenue, Chicago, IL 60611

Safety in the Woodshop (Bulletin #S-046-78)

4. Safety Rules, 3727 Joan Drive, Waterloo, IA 50702

a. Safety Crossword Puzzles
b. Safety in the Metal Shop
c. Safety Rules for the Wood Shop

E. Posters

1. National Safety Council, 444 N. Michigan Avenue, Chicago, IL 60611

(Request catalog)

2. Safety Rules, 3727 Joan Drive, Waterloo, IA 50702

Machine Safety Rule Cards
General Safety Signs

(Request catalog and order form)

3. State AIASA Specialist, Industrial Arts Service, P.O. Box 6Q, Richmond, VA 23216

(Request information on Safety Poster Contest)

IX. TV Resources

The following 25-minute video cassettes are from the Industrial Arts for the '70s Series, available from Audiovisual Services, Department of Education, P.O. Box 6Q, Richmond, VA 23216.

A. Introductory Material

Lesson 1--Industrial Arts for You and the '70s

B. General Safety

Lesson 2--It's Better to Be Safe Than. . .

C. Drafting

Lesson 3--The Peculiar Language of Industry

D. Mass Production

Lesson 4--Let's Make Money--for Everyone
Lesson 5--You've Got to Be Organized
Lesson 6--If We Do It Like This . . .
Lesson 7--Why Didn't We Think of That?

E. IACP Manufacturing

Lesson 8--More Ways to Study Manufacturing

IX. F. Graphic Arts

Lesson 9--Print It Like It Is
Lesson 10--Signs for the Times

G. Electronics

Lesson 11--Ya Gotta Have a Gadget
Lesson 12--So Your Battery's Dead

H. Group Project

Lesson 13--From Beginning to End
Lesson 14--From Here It Goes To . . .

I. Occupational Information

Lesson 15--Engineering and Management
Lesson 24--Production Line and Service Jobs
Lesson 29--But I Want to Work!

J. Construction

Lesson 16--This Industry Makes It--Right Where It's At
Lesson 17--Easy Come, Easy Go
Lesson 18--One Day You'll Have the Say
Lesson 19--Ways to Study Construction

K. Plastics

Lesson 20--Make It With Plastics

L. Unit Method

Lesson 21--Let's Become an Expert
Lesson 22--If You Can't Write--Call Right
Lesson 23--And This Is How It Worked

M. Individual Project--Product Development

Lesson 25--It's a Whatchamacallitt
Lesson 26--Will It Work? Will It Sell?

N. Product Development and Testing

Lesson 27--Whoops! Better Luck Next Time

O. Educational Information

Lesson 28--What Now???

P. Summary

Lesson 30--In Retrospect

X. Addresses for AV Suppliers, Corporations, Agencies, and Associations

A. AV Suppliers

AIMS Instructional Media Services, Inc.
626 Justin Avenue
Glendale, CA 91201

Aluminum Association
750 Third Avenue
New York, NY 10017

American Mining Congress
1920 N Street, NW
Suite 300
Washington, DC 20036

American Paper Institute
260 Madison Avenue
New York, NY 10016

Audiovisual Services
Department of Education
P.O. Box 6Q
Richmond, VA 23216

BARR Films
3490 E. Foothill Boulevard
Pasadena, CA 91107

Bergwall Productions, Inc.
839 Stewart Avenue
Garden City, NJ 11530

BFA Educational Media
2211 Michigan Avenue
Santa Monica, CA 90404

Brooklyn Union Gas
195 Montague Street
Brooklyn, NY 11201

Contemporary/McGraw-Hill Films
1221 Avenue of the Americas
New York, NY 10020

Coronet Instructional Films
65 E. South Water Street
Chicago, IL 60601

DCA Educational Products
Warrington, PA 18976

Education Dimensions Group
Box 126
Stamford, CT 06904

Do-All Machine Company
Film Librarian
254 N. Laurel Street
Des Plains, IL 60016

Encyclopedia Britannica
Educational Corporation
425 N. Michigan Avenue
Chicago, IL 60611

Exxon Corporation
1251 Avenue of the Americas
New York, NY 10020

Ford Motor Company
Motion Picture Department
300 Schaefer Road
Dearborn, MI 48122

Industrial Arts Education Service
P.O. Box 6Q
Richmond, VA 23216

Interpretive Education
Department DM
2306 Winters Drive
Kalamazoo, MI 49002

The Manufacturing Forum
Ball State University
Muncie, IN 47306

McGraw-Hill Films
1658 Carman Drive
Elk Grove Village, IL 60007

Modern Talking Pictures Service
5000 Park Street North
St. Petersburg, FL 33709

National AIASA
1908 Association Drive
Reston, VA 22091

X. A.

Prentice-Hall Media
750 White Plains Road
Tarrytown, NY 10591

Proctor & Gamble
P.O. Box 14009
Cincinnati, OH 45214

Reynolds Metals Company
P.O. Box 27003
Richmond, VA 23261

Shell Oil Film Library
1433 Sadlier Circle West Drive
Indianapolis, IN 46239

Sun Maid Growers of California
13525 S. Bethel Avenue
Kingsburg, CA 93631

Tupperware Company
Education Service
P.O. Box 1071
Providence, RI 02901

United States Steel
600 Grant Street
Pittsburgh, PA 15230

Xerox Films
245 Long Hill Road
Middletown, CT 06457

B. Corporation Addresses

1. Suggested Corporations

The following are examples of corporations and companies that very willingly supply information for unit studies related to their products or services:

Bethlehem Steel Corporation
Bethlehem, PA 18016

Boeing Aerospace Company
Public Relations
Seattle, WA 98124

Bristol Steel & Iron Works, Inc.
300 Piedmont Street
P.O. Box 471
Bristol, VA 24201

C & P Telephone
703 East Grace Street
Richmond, VA 23219

Eastman Kodak Company
343 State Street
Rochester, NY 14650

General Electric
570 Lexington Avenue
New York, NY 10022

General Motors Corporation
General Motors Building
Detroit, MI 48202

Hammermill Papers Group
P.O. Box 1440
Erie, PA 16533

Hughes Aircraft Company
Public Relations
P.O. Box 92919--Airport Station
Los Angeles, CA 90009

Lone Star Industries, Inc.
One Greenwich Plaza
Greenwich, CT 06830

Martin Marietta Corporation
277 Park Avenue
New York, NY 10017

McDonnell Douglas Corporation
Public Relations
P.O. Box 516
St. Louis, MO 63166

Radio Corporation of America
30 Rockefeller Plaza
New York, NY 10020

Reynolds Metals Company
6601 W. Broad Street
Richmond, VA 23261

X. B. 1.

Rockwell International
Space Division
12214 Lakewood Boulevard
Downey, CA 90241

Rohm and Haas
Independence Mall West
Philadelphia, PA 19105

United States Steel Corporation
Public Affairs Department
600 Grant Street
Pittsburgh, PA 15230

Westinghouse Electric Corporation
Gateway Center
Westinghouse Building
Pittsburgh, PA 15222

2. Library Reference to Other Company Addresses

Thomas Register of American Manufacturers & Thomas Register Catalog File, published by Thomas Publishing Co., One Penn Plaza, New York, NY 10001.

Industrial Directory of Virginia, published by the Research Department of Virginia State Chamber of Commerce, 611 E. Franklin Street, Richmond, VA 23219.

Moody's Industrial Manual, published by Moody's Investors Service, Inc., 99 Church Street, New York, NY 10007.

The Million Dollar Directory, published by Dun and Bradstreet, Inc., 99 Church Street, New York, NY 10007.

The Principal International Businesses, The World Marketing Directory, published by Dun and Bradstreet, Inc., 99 Church Street, New York, NY 10007.

Encyclopedia of Business Information Sources, published by Gale Research Co., Book Tower, Detroit, MI 48226.

Directory of Special Libraries and Information Centers, published by Gale Research Co., Book Tower, Detroit, MI 48226.

The National Trade and Professional Associations of the United States and Labor Unions, published by Columbia Books, Inc., Room 601, Washington, DC.

Encyclopedia of Associations, published by Gale Research Co., Book Tower, Detroit, MI 48226.

Middle Market Directory, published by Dun and Bradstreet, Inc., 99 Church Street, New York, NY 10007.

Literary Market Place, published by R.R. Bowker, Co., 1180 Avenue of the Americas, New York, NY 10036.

X. C. Government Agency Addresses

The following agencies may be helpful in finding specific information related to a student's unit topic:

1. Federal Agencies

Consumer Information Center
Pueblo, CO 81009

Government Printing Office
Superintendent of Documents
Washington, DC 20402

National Aeronautics & Space Administration
Langley Research Center
Educational Programs Office
Mail Stop 154
Hampton, VA 23365

U.S. Department of Commerce
1700 K Street, N.W.
Washington, DC 20006

U.S. Department of Energy
Technical Information Center
P.O. Box 62
Oak Ridge, TN 37830

U.S. Patent Office
Washington, DC 20231

2. State Agencies

Virginia Department of Aviation
4508 S. Laburnum Avenue
P.O. Box 7716
Richmond, VA 23231

Virginia Department of Labor and Industry
P.O. Box 1814
Richmond, VA 24214

Virginia Energy Division
Office of Emergency & Energy Services
310 Turner Road
Richmond, VA 23225

Virginia Highway Safety Division
800 Turner Road
Richmond, VA 23225

Virginia Public Transportation Division
Department of Highways & Transportation
1401 E. Broad Street
Richmond, VA 23219

Virginia State Library
State Library Building
11th & Capital Streets
Richmond, VA 23219

Virginia State Travel Service
6 North 6th Street
Richmond, VA 23219

3. Library Reference to Other Government Agencies

Directory of Special Libraries and Information Centers, published by Gale Research Co., Book Tower, Detroit, MI 48226.

This is a guide to special libraries, research libraries, and information centers which are operated by the government, educational institutions, or various groups in technology, medicine, religion, etc.

X. D. Association Addresses

1. Suggested Associations

Students or teachers writing to these addresses will receive either publications or listings of publications to order.

Aerospace Education Foundation
1750 Pennsylvania Avenue, N.W.
Washington, DC 20006

Aerospace Industries Association of America
1725 DeSales Street, N.W.
Washington, DC 20036

Air Transport Association of America
1709 New York Avenue, N.W.
Washington, DC 20006

American Electronics Association
2680 Hanover Street
Palo Alto, CA 94304

American Foundryman's Society
Golf and Wolf Roads
Des Plaines, IL 60016

American Gas Association
Educational Services
1515 Wilson Boulevard
Arlington, VA 22209

American Institute of Architects
1735 New York Avenue, N.W.
Washington, DC 20006

American Institute for Design and Drafting
3119 Price Road
Bartlesville, OK 74003

American Institute of Physics
335 East 45th Street
New York, NY 10017

American Meteorological Society
45 Beacon Street
Boston, MA 02108

American Nuclear Society
555 N. Kensington Avenue
La Grange, IL 60525

American Society of Civil Engineers
United Engineering Center
345 East 47th Street
New York, NY 10017

American Society of Mechanical Engineers
United Engineering Center
345 East 47th Street
New York, NY 10017

American Trucking Associations
1616 P Street, N.W.
Washington, DC 20036

Archaeological Institute of America
53 Park Place, 8th Floor
New York, NY 10007

Associated General Contractors of America
1957 E Street, N.W.
Washington, DC 20036

Association of American Railroads
American Railroads Building
1920 L Street, N.W.
Washington, DC 20036

Association for Bridge Contruction and Design
339 Boulevard of Allies
Pittsburgh, PA 15222

Association for Computing Machinery
11 West 42nd Street, 3rd Floor
New York, NY 10036

Electronic Industries
2001 I Street, N.W.
Washington, DC 20006

Fluid Power Society
909 N. Mayfair Road
Milwaukee, WI 53226

X. D. 1. General Aviation Manufacturers Association
1025 Conneticut Avenue, N.W.
Washington, DC 20036

International Radio and Television Society
420 Lexington Avenue
New York, NY 10170

Motor Vehicle Manufacturers Association
320 New Center Building
Detroit, MI 48202

National Association of Broadcasters
1771 N Street, N.W.
Washington, DC 20036

National Association of Home Builders
15th & M Street, N.W.
Washington, DC 20005

National Coal Association
Coal Building
1130 17th Street, N.W.
Washington, DC 20036

National Energy Foundation
366 Madison Avenue, Suite 705
New York, NY 10017

National Safety Council
444 N. Michigan Avenue
Chicago, IL 60611

National Technical Association
Southern Building
1425 H Street, N.W., Suite 701
Washington, DC 20005

Natural Resources Defense Council
122 East 42nd Street
New York, NY 10017

Plastics Education Foundation
656 West Putnam Avenue
Greenwich, CT 06830

Society of Manufacturing Engineers
Education Department
One SME Drive
Dearborn, MI 48128

Society of Naval Architects and Marine Engineers
One World Trade Center, Suite 1369
New York, NY 10048

Tele-Communications Association
424 South Pima Avenue
West Covina, CA 91790

2. Library Reference to Other Associations Related to Topic

Encyclopedia of Associations, published by Gale Research Co., Book Tower, Detroit, MI 48226.

This is a directory of national organizations. It is divided into sections (e.g. "Trade Business and Commercial Organizations," "Educational Associations,") and lists sources of additional information about a particular industry. The directory is also arranged by a geographical index so that organizations within a desired locality may be determined. An Excutive Index provides the address of officials within particular associations.

The National Trade and Professional Associations and Labor Unions of the United States, published by Columbia Books, Inc., Washington, DC.

This directory lists associations under product name or unit topic.

APPENDIX B

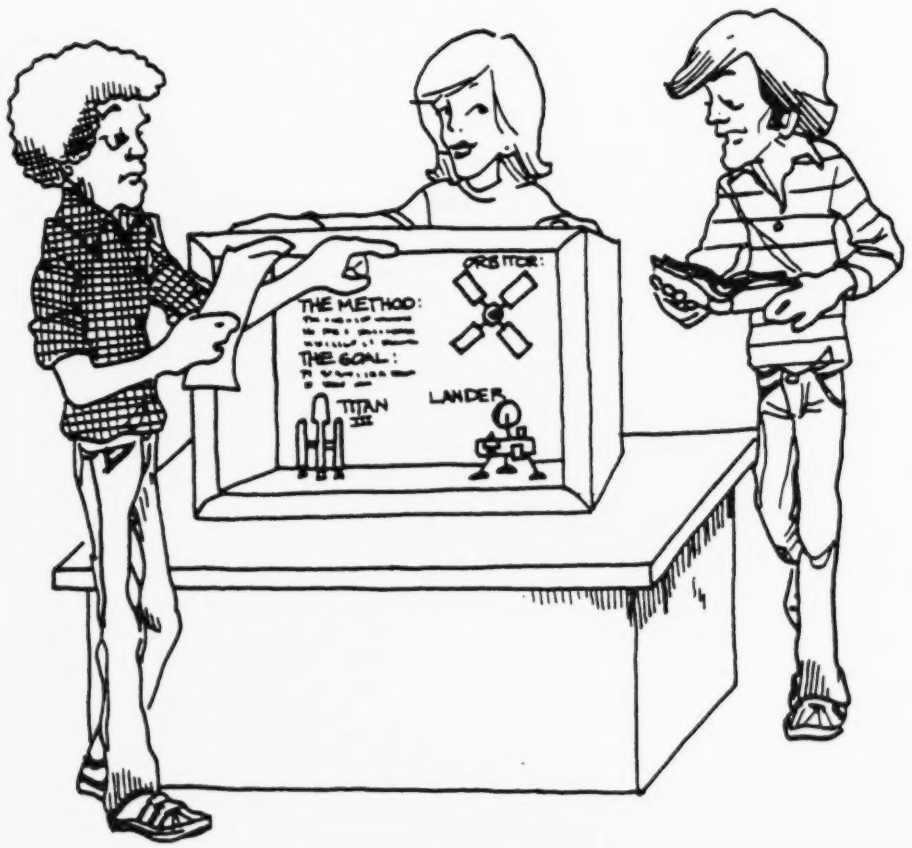
INSTRUCTIONAL MATERIALS FOR STUDY OF PROCESS/PROJECT INDUSTRIES

I. Transparency Masters

II. Student Handouts

THE GROUP PROJECT

THE STUDY OF ONE INDUSTRY IN DEPTH.



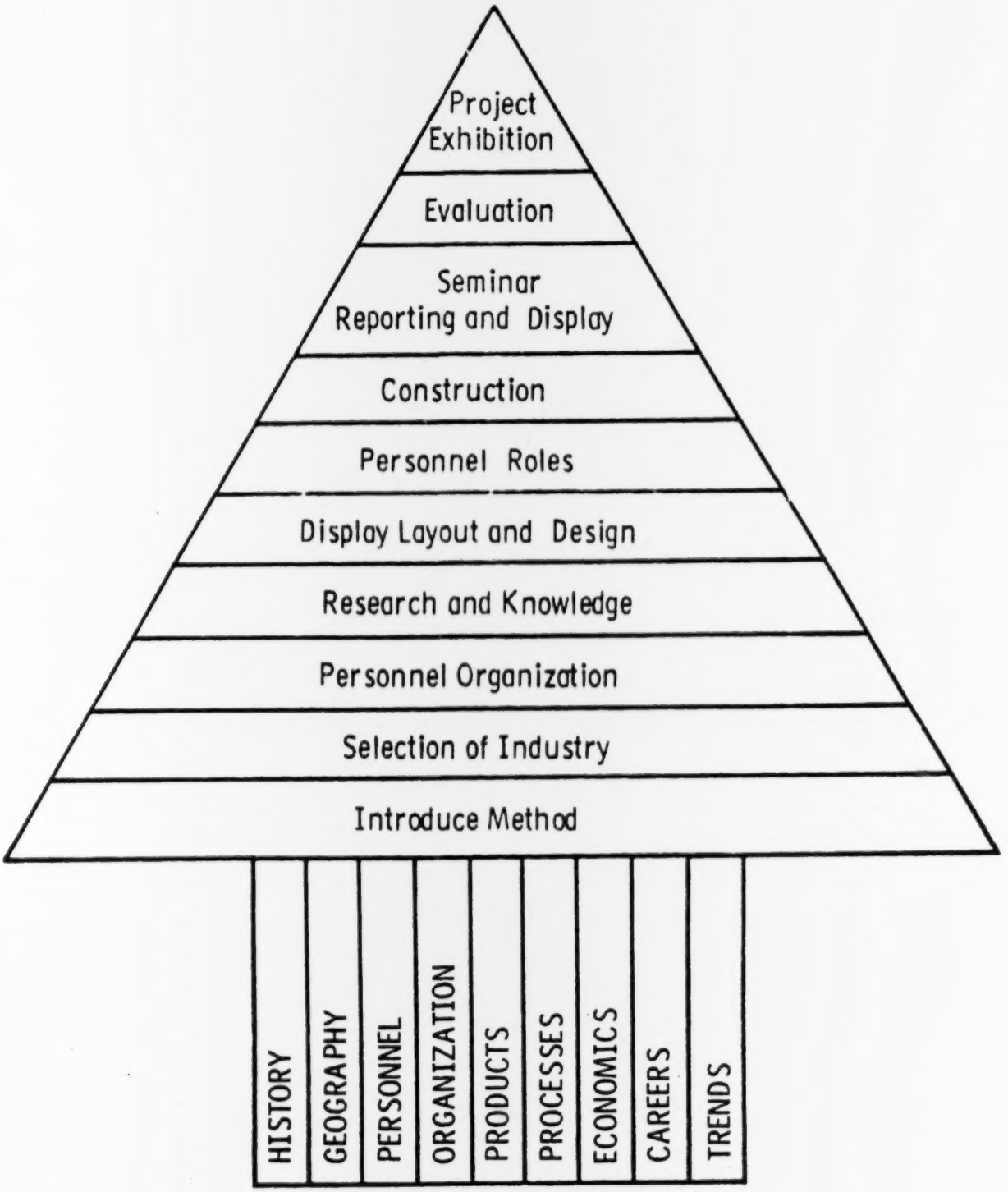
SOLVING

PROBLEMS

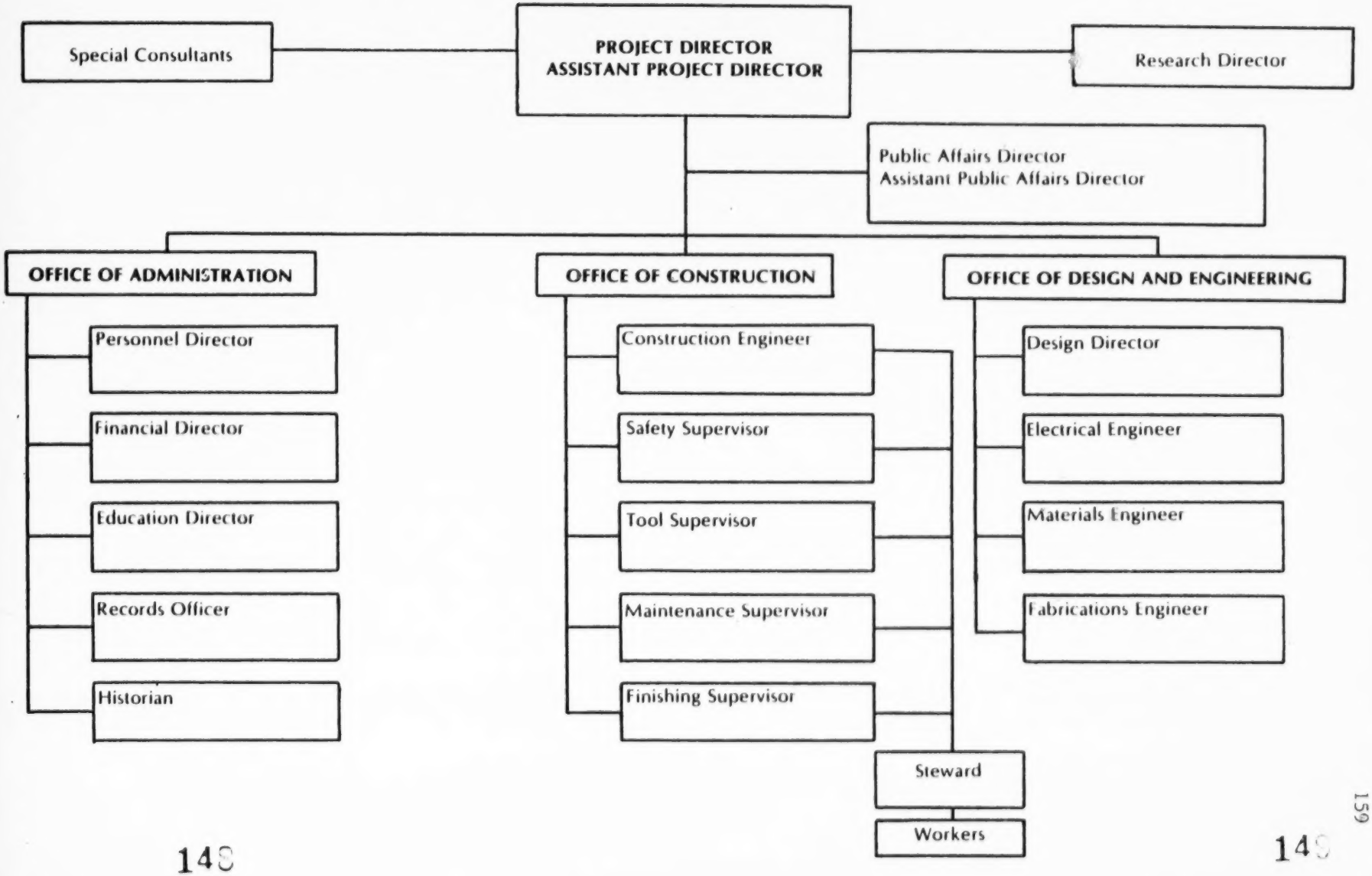
IN

1. Selecting
2. Role Playing
3. Researching
4. Planning
5. Designing
6. Experimenting
7. Constructing
8. Reporting
9. Evaluating

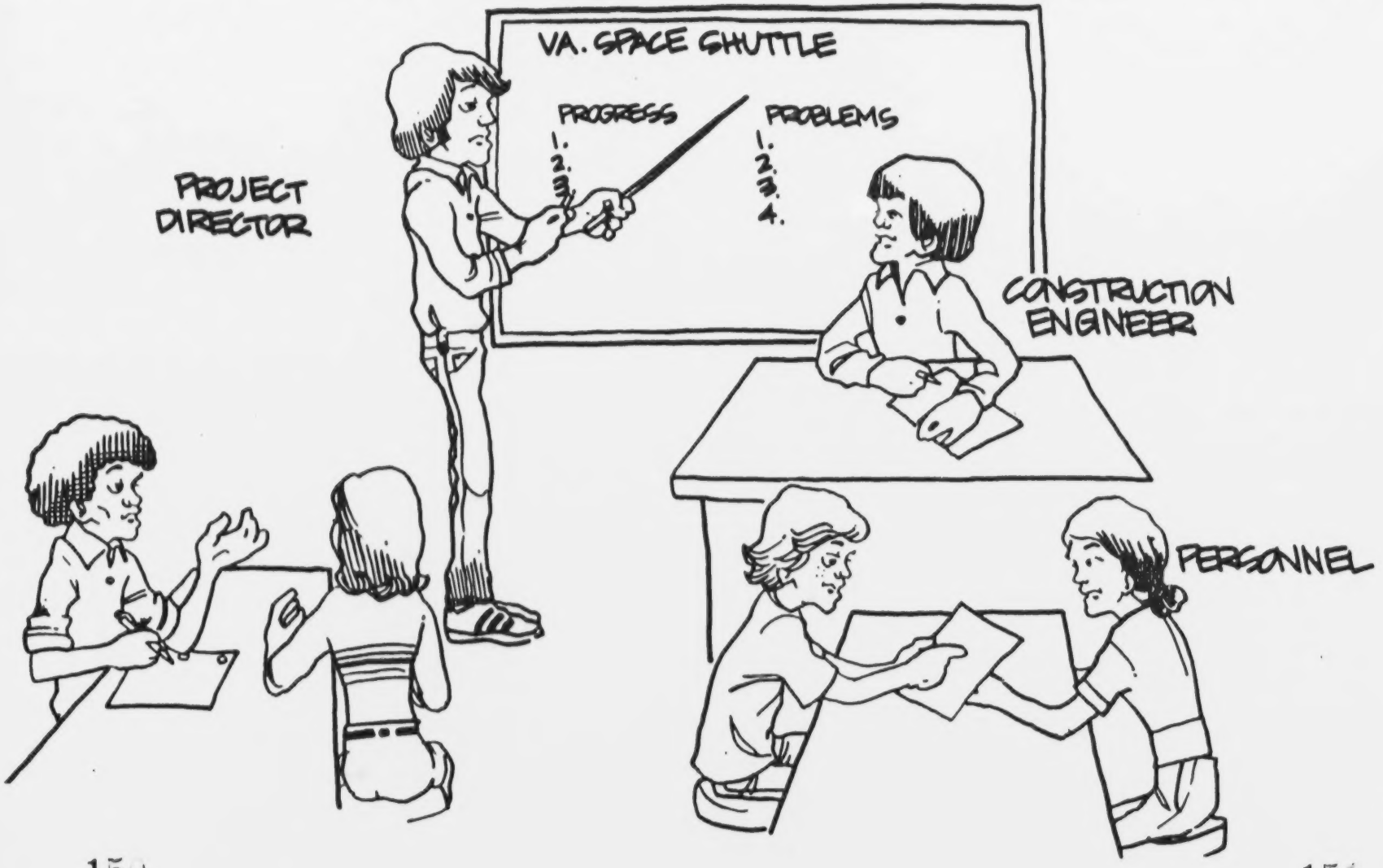
The Group Project Summary

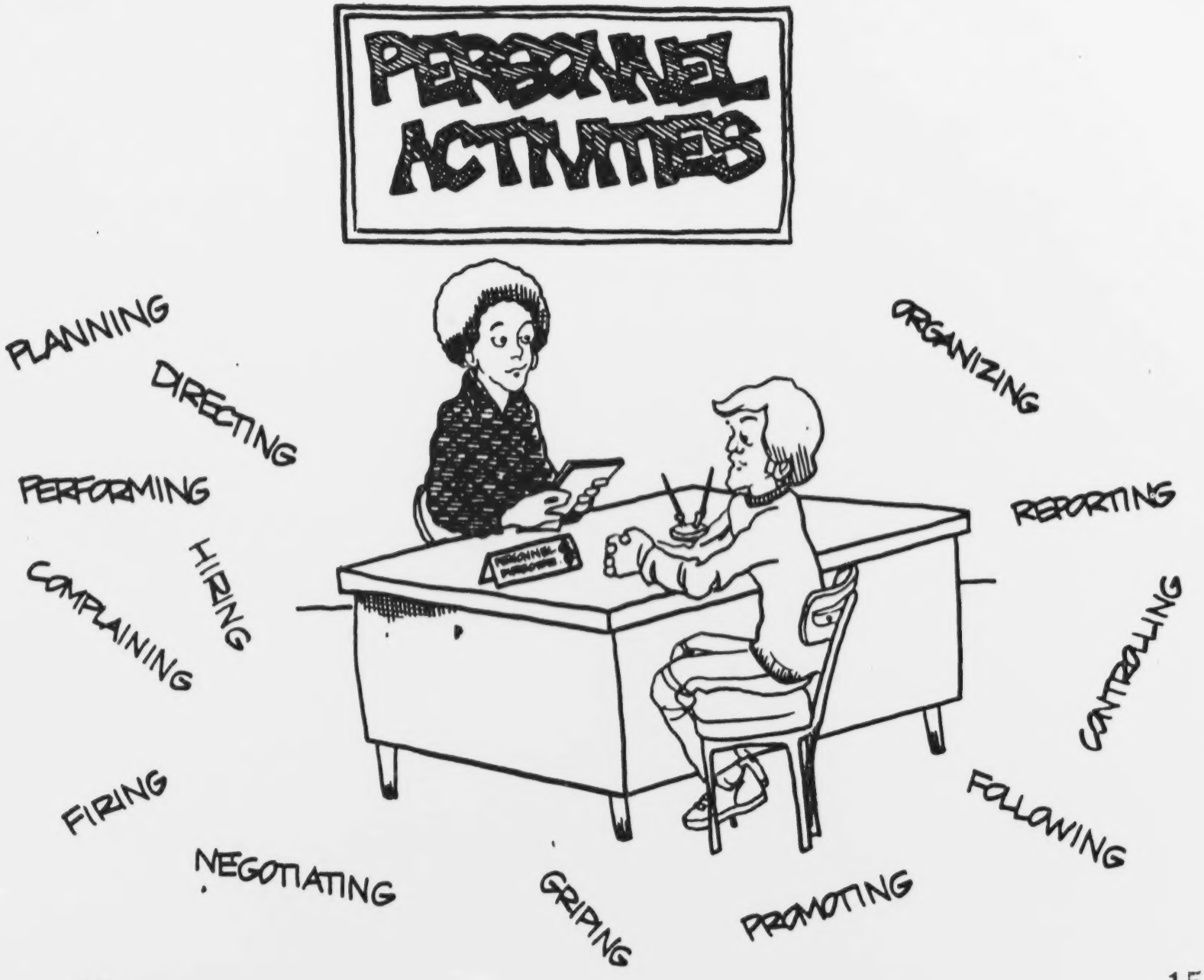


SAMPLE GROUP PERSONNEL SYSTEM



COMPANY MEETING



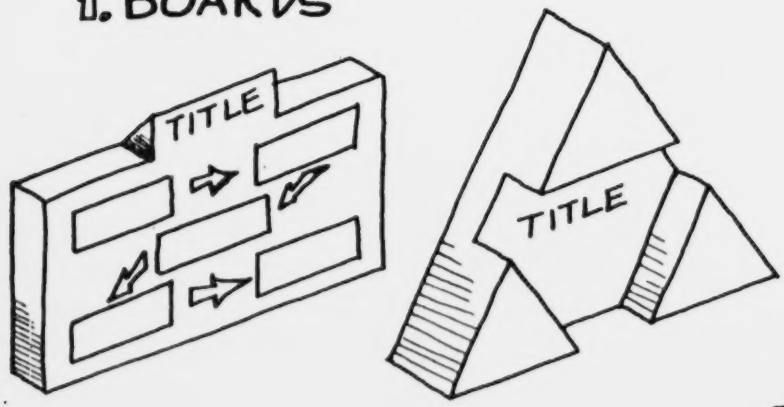

PERSONNEL ACTIVITIES
PLANNING
DIRECTING
PERFORMING
HIRING
COMPLAINING
FIRING
NEGOTIATING
GRIPING
PROMOTING
FOLLOWING
CONTROLLING
REPORTING
ORGANIZING

RESEARCH and RESOURCES on INDUSTRY

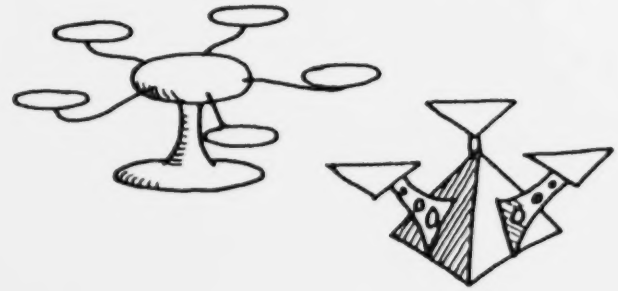
LETTERS
PHONE CALLS
SALES LITERATURE
VISITS
TELEVISION
BOOKS
GOVERNMENT PUBLICATIONS
LIBRARIES
INTERVIEWS
BOOKLETS
MAGAZINES
INDUSTRIAL CONTACTS
FILMS
COMPANIES AND BUSINESSES
LECTURES
TALKS WITH EMPLOYEES IN THE CAREER FIELD
ASSOCIATIONS
MUSEUMS

BASIC DISPLAY TYPES

1. BOARDS

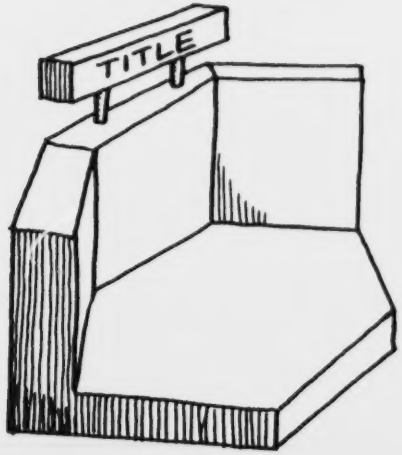


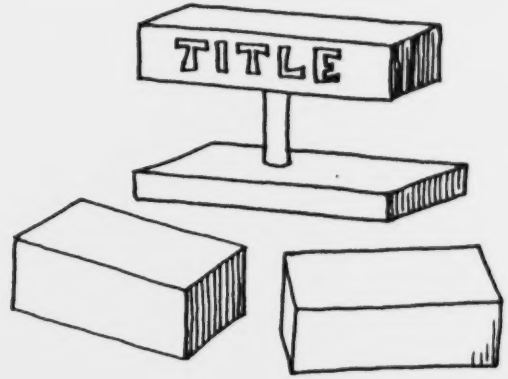
2. PEDESTALS



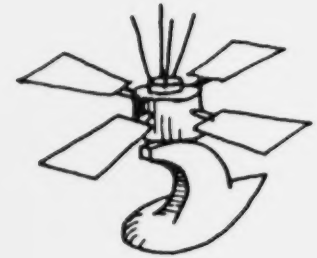
4. COMPONENTS

3. BASES





5. OBJECTS



HANDOUT 1

GROUP PROJECT

JOB DESCRIPTIONS OF PERSONNEL

Project Director

1. Presides over all company meetings
2. Supervises all activities relating to design, construction, and completion of the project
3. Writes a job description for this particular title.

Assistant Project Director

1. Performs all duties assigned by the project director
2. Responsible for job assignments of members of the group.

Research Director

1. Coordinates the collection of all information necessary to construct the display
2. Writes a job description for this particular title
3. Assists the design and construction engineer in researching and identifying the necessary components of the industry's technological process
4. Constructs some part of the display.

Public Affairs Director

1. Greets visitors to the laboratory and makes formal introductions
2. Explains the work going on in the laboratory to any visitors
3. Writes a job description for this particular title
4. Constructs some part of the display.

Assistant Public Affairs Director

1. Assists the public affairs director in all duties
2. Responsible for acquainting school administration, faculty, and students with the project.

Special Consultants

1. Instructors: Coordinate activities and assist personnel as needed
2. Other outside resources: May consist of school, community business persons and information in materials supplied by them.

OFFICE OF ADMINISTRATION

Personnel Director

1. Develops a personnel chart relevant to the industry under study
2. Creates job
3. Selects by interview persons to fill the necessary jobs

Handout 1 (continued)

4. Writes a job description for this particular title
5. Develops a job application form
6. Constructs some part of the display.

Financial Director

1. Creates or works up forms for all personnel in the class to use in purchasing and obtaining materials needed for the display
2. Responsible for obtaining forms used by the industry under study
3. Constructs some part of the display
4. Writes a job description for this particular title
5. Originates and directs procurement procedures.

Education Director

1. Educates the members of the class which form the company organization
2. Arranges for field trips, guest speakers, movies, and bulletin board displays
3. Writes a job description for this particular title
4. Organizes a system for student class reports
5. Organizes a form for evaluating student reports
6. Constructs some part of the display.

Records Officer

1. Is in charge of all information written by all directors to be given to the project director
2. Keeps minutes of all company meetings.

Historian

1. Assists the records officer
2. Prepares a written summary of project from beginning to end.

OFFICE OF CONSTRUCTION

Construction Engineer

1. Is responsible for the skeleton construction of the display
2. Constructs some part of the display
3. Writes a job description for this particular title.

Maintenance Supervisor

1. Organizes a class clean-up system
2. Reports breakdown of machines to instructor.

Tool Supervisor

1. Makes inventory of tools at end of each period
2. Reports missing and broken tools to the instructor.

Handout 1 (continued)

Finishing Supervisor

1. Works with design and engineering to determine the types of finish to use and supervises the application of finishes on the project.
2. Supervises care and clean-up of finishing materials.

Safety Supervisor

1. Checks on safety practices of class members
2. Prepares accident forms
3. Gives safety lectures
4. Prepares posters which would be appropriate for the industry under study
5. Writes a job description for this particular title
6. Constructs some part of the display.

OFFICE OF DESIGN AND ENGINEERING

Design Engineer

1. Establishes the overall design and specifications of the group display
2. Provides preliminary sketches of the overall design of the project
3. Writes a job description for this particular title
4. Constructs some part of the display.

Electrical Engineer

1. Develops all electrical systems of the project
2. Coordinates installation of electrical components and systems.

Fabrication Engineer

1. Responsible for organizing class to build the model
2. Researches various methods of fastening parts together.

Materials Engineer

1. Decides what materials should be used for the structure and the model
2. Compiles a list of materials from all offices and gives them to procurement director.

Note: The personnel system may have dual roles for both the Group Project study and student clubs. For example:

Project Director	-President
Assistant Project Director	-Vice President
Research Director	-Secretary
Public Affairs	-Treasurer

HANDOUT 2

SUGGESTED OUTLINE FOR THE GROUP PROJECT

"COMPANY BOOK"

Following is a suggested format for a Company Book. The Company Book is designed to help pull the entire experience together and to ensure that all project participants view the total amount of work produced. The listing below is by no means meant to be all inclusive, as the use of portions of the outline are dependent upon how the project developed and the type of industry under consideration.

1. Cover--company name, indicative of the industry studied.

2. Preface--written by Public Relations Director, establishes scope.

3. Table of Contents

4. Personnel Activities
   a. Organizational chart
   b. Contract negotiated by the group
   c. Role definitions/job descriptions
   d. Forms--job applications, resumes, bulletins, etc.

5. Industry under consideration
   a. Introduction--scope, written by Public Relations Director
   b. History of the industry
   c. Social importance of the industry
   d. Master drawings--module drawings, specifications
   e. Module explanations
   f. Production sequence chart
   g. Progress reports from the company seminars
   h. Cost accounting

6. Summation--written by Project Director

7. Photographs

8. Bibliography

9. Examples of research found--bulletins, pamphlets, illustrations, etc.

HANDOUT 3

Group Project Progress Report

1.) Student's name or committee title: _____

2.) Progress report for the period from _____ to _____

3.) Name of group project: _____

4.) Student position in project personnel plan: _____

5.) Accomplishments for the period of this report related to your position in the group project personnel plan:

_____

_____

_____

_____

_____

6.) Progress report on general activities related to the building of the project:

	Duties assigned:	Progress report:
1.	_____	_____
2.	_____	_____
3.	_____	_____
4.	_____	_____
5.	_____	_____
6.	_____	_____
7.	_____	_____
8.	_____	_____
9.	_____	_____
10.	_____	_____

*Teacher comments:

_____

_____

_____

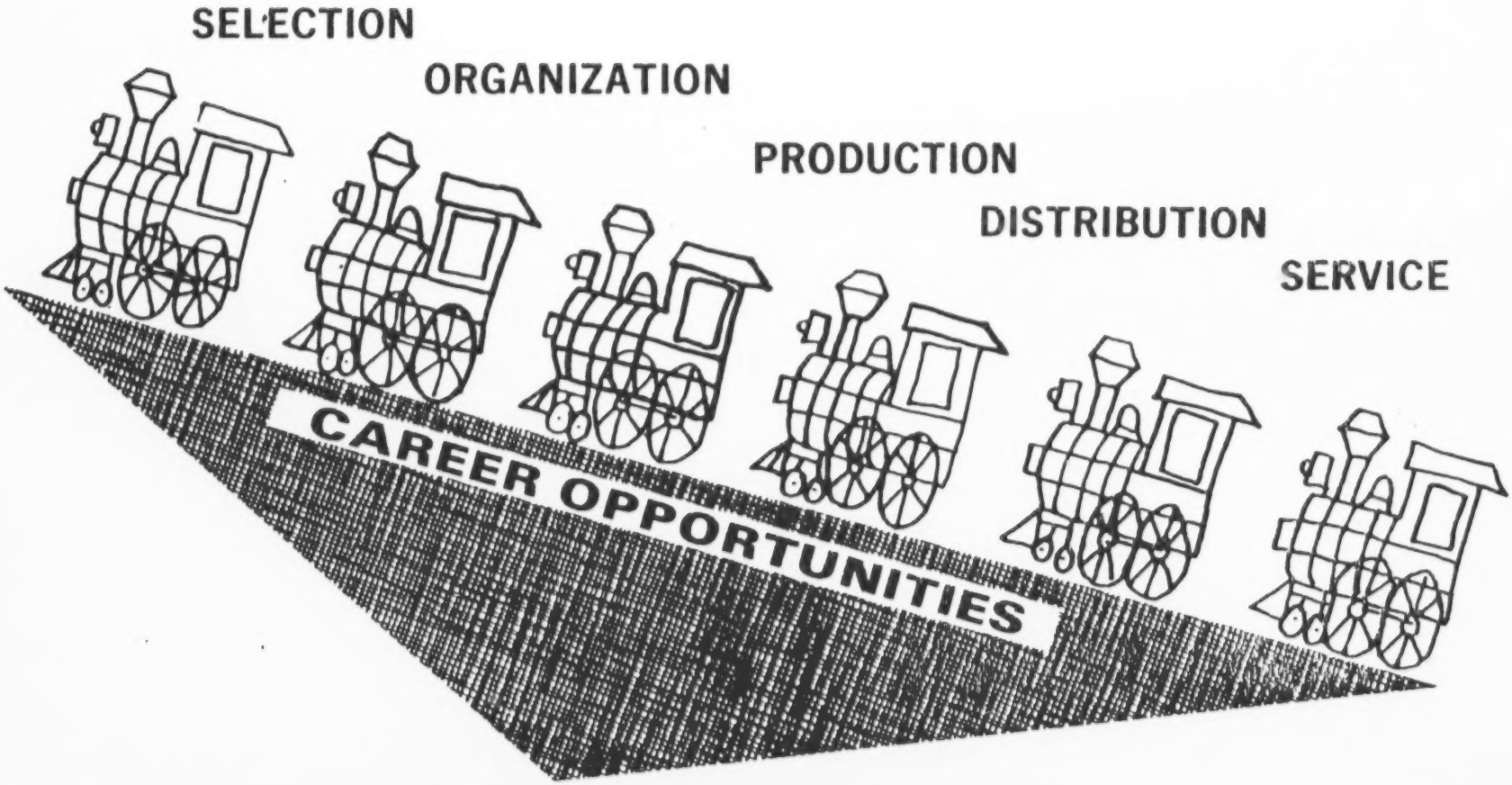
APPENDIX C

INSTRUCTIONAL MATERIALS FOR STUDY OF LINE-PRODUCTION INDUSTRIES

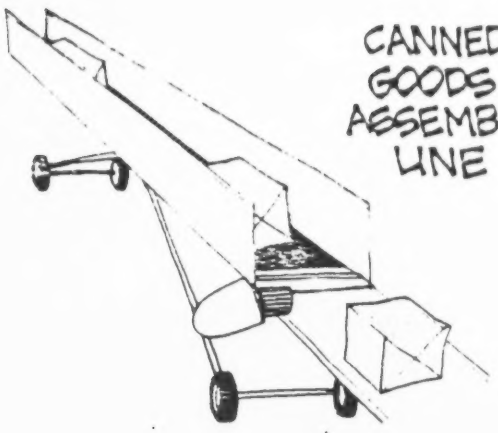
I. Transparency Masters

II. Student Handouts

LINE PRODUCTION

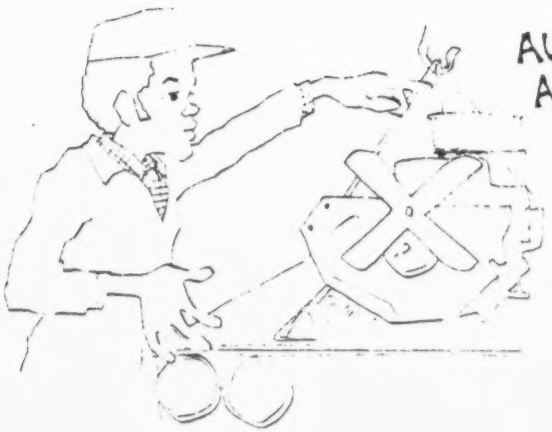


PRODUCT



CANNED GOODS ASSEMBLY LINE

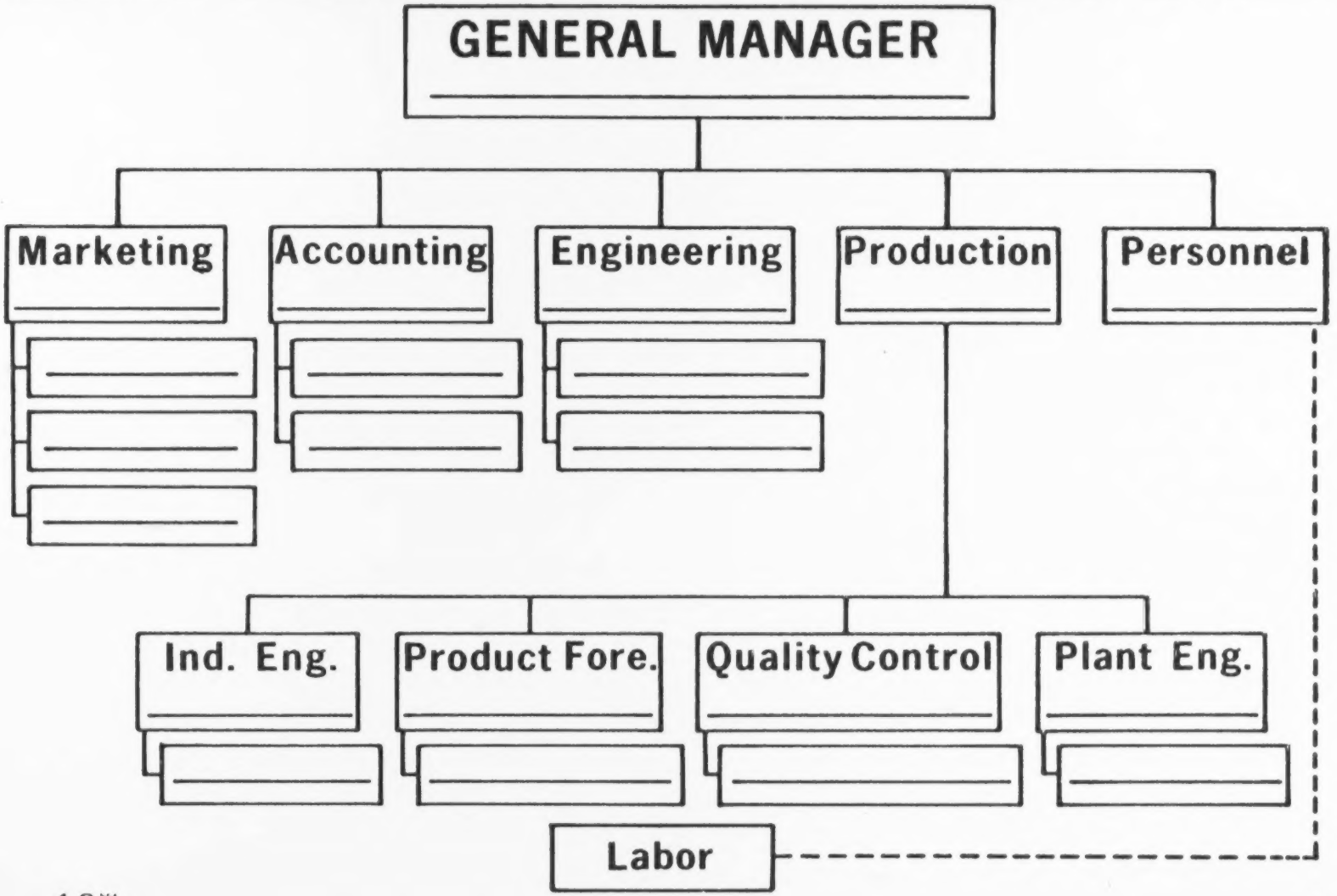
ELECTRIC APPLIANCE ASSEMBLY LINE



AUTOMOTIVE ASSEMBLY LINE

LINE PRODUCTION

ORGANIZATION OF COMPANY

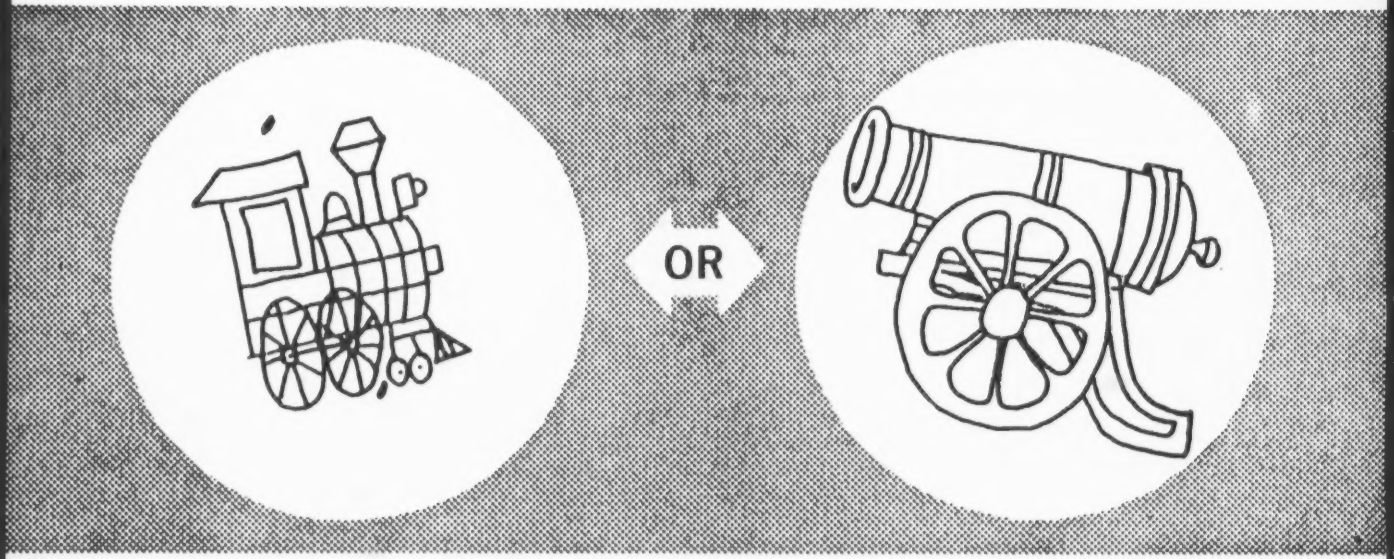


SELECTION OF A PRODUCT

WHAT WILL BE PRODUCED?

WHAT WILL BE DONE WITH THE PRODUCT ?

SALES FORECAST?



PROTOTYPE CONSTRUCTION

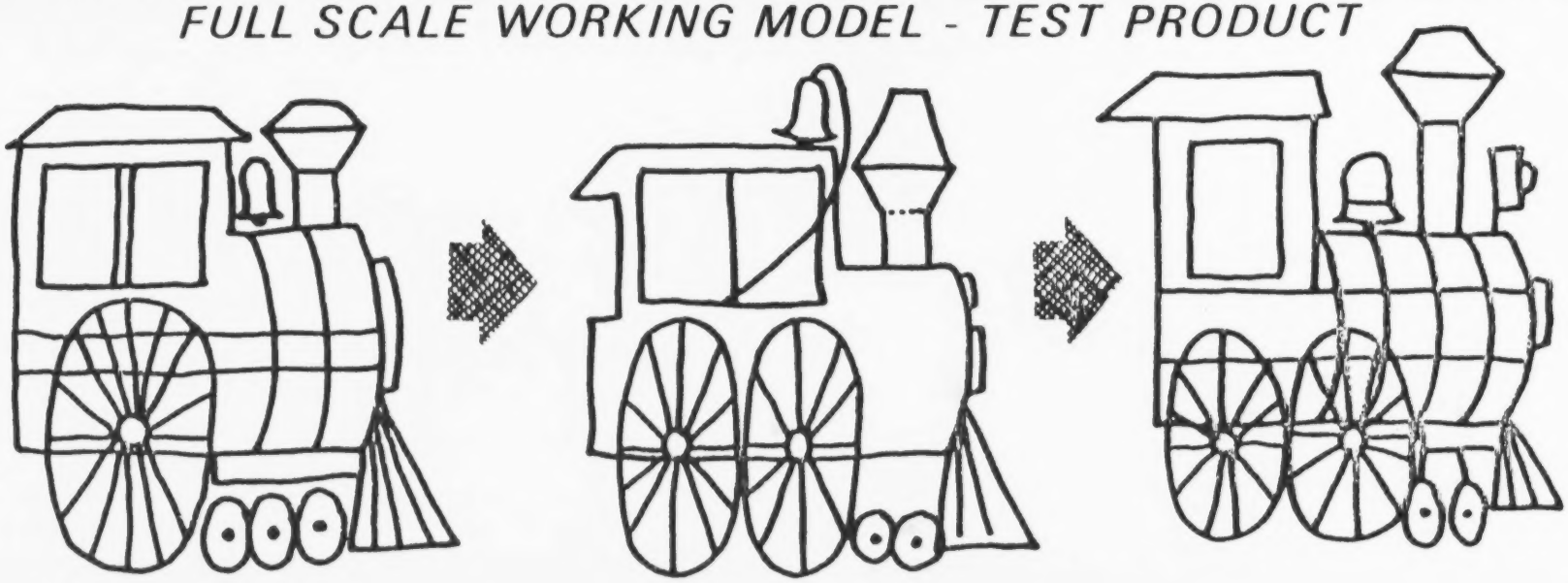
BUILT BY: DESIGN DEPARTMENT
SAFETY ENGINEER
PRODUCTION ENGINEERS

EVALUATION BY COMPANY

DESIGN CHANGES - DEBUG!

PLANNING FOR PRODUCTION

FULL SCALE WORKING MODEL - TEST PRODUCT



NUMBER 2 5

THIS CERTIFIES THAT _____ IS THE OWNER OF

§ § SHARES

# of Psycha Life, Inc.

This certificate entitles the above named person to one share of stock in the above named corporation. The brigital face value of this stock is 50 cents. The holder of this certificate is subject to the risk of an increase or decrease of its face value. The purpose of this corporation is to provide an educational experience for Industrial Arts Students. The corporation will be liquidated and all assets will be apportioned among the stockholders at the end of the learning experience.

BAYSIDE JUNIOR HIGH SCHOOL

NEWTOWN ROAD

VIRGINIA BEACH, VIRGINIA

_____ President

_____ Salesman

189

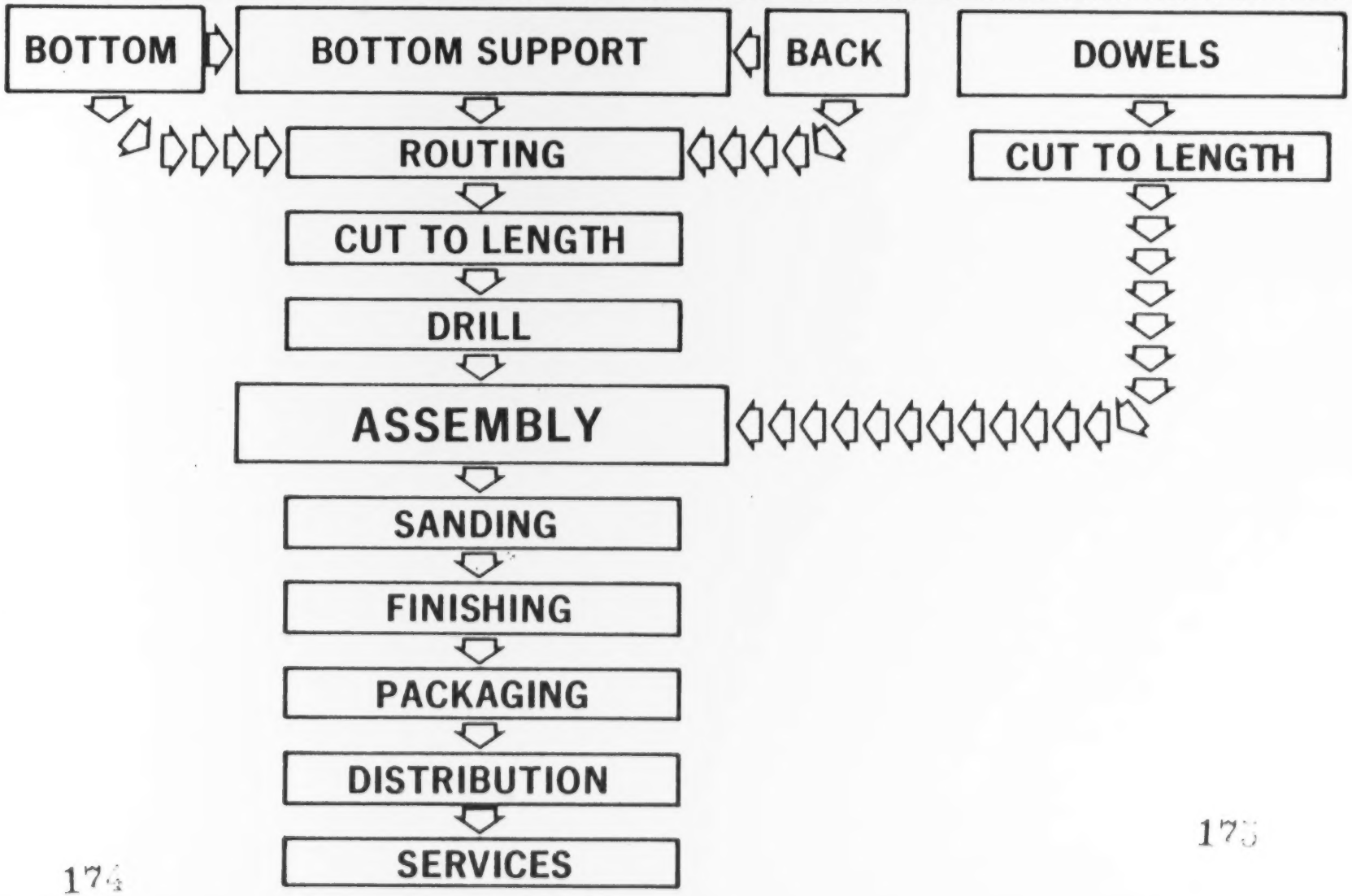
© GOES 172

LITHO IN U.S.A. 173

VIRGINIA INDUSTRIAL ARTS, INC.

SAMPLE ROUTING CHART

PRODUCTION DEPT.



CAREERS

IN MARKETING

- ADVERTISING
- PACKAGING
- DISTRIBUTION
- SALE OF THE PRODUCT
- COST - ANALYSIS - PROFIT
- FINAL REPORT TO COMPANY

IN THE MANUFACTURING PROCESS

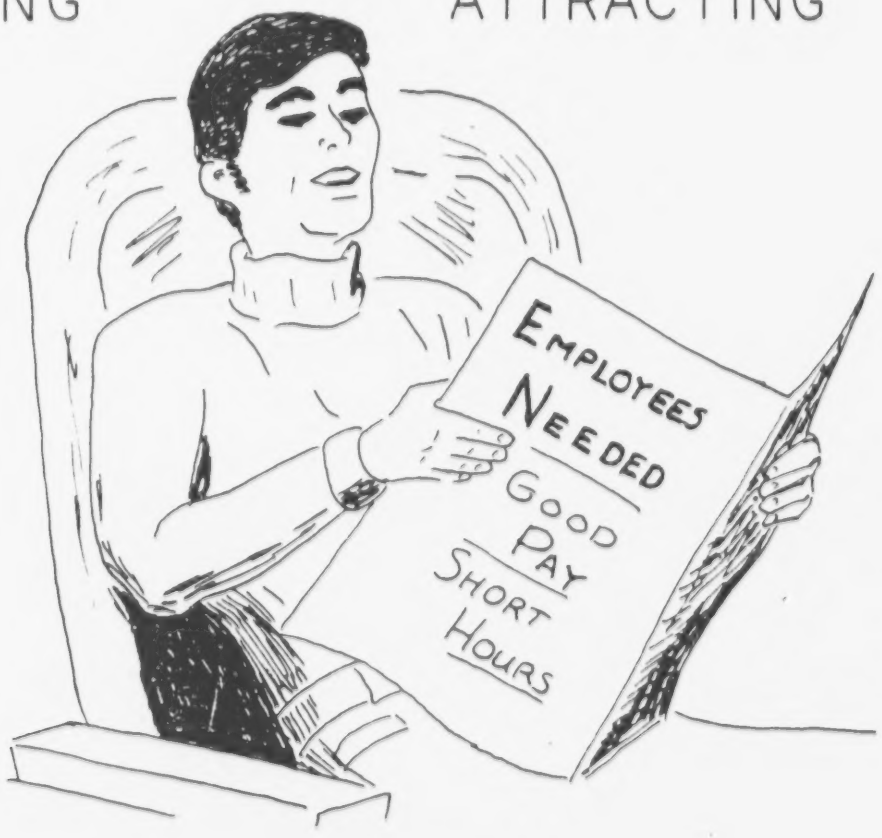
- PRODUCT SELECTION
- RESEARCH & EXPERIMENTATION
- TECHNICAL DRAWING
- PROTOTYPE
- TOOLING UP
- SERVICES
- LABOR
- MARKETING
- VOLUME PRODUCTION

PERSONNEL ACTIVITIES

HIRING PERSONNEL

RECRUITING

FINDING ATTRACTING



SELECTION

APPLICATION

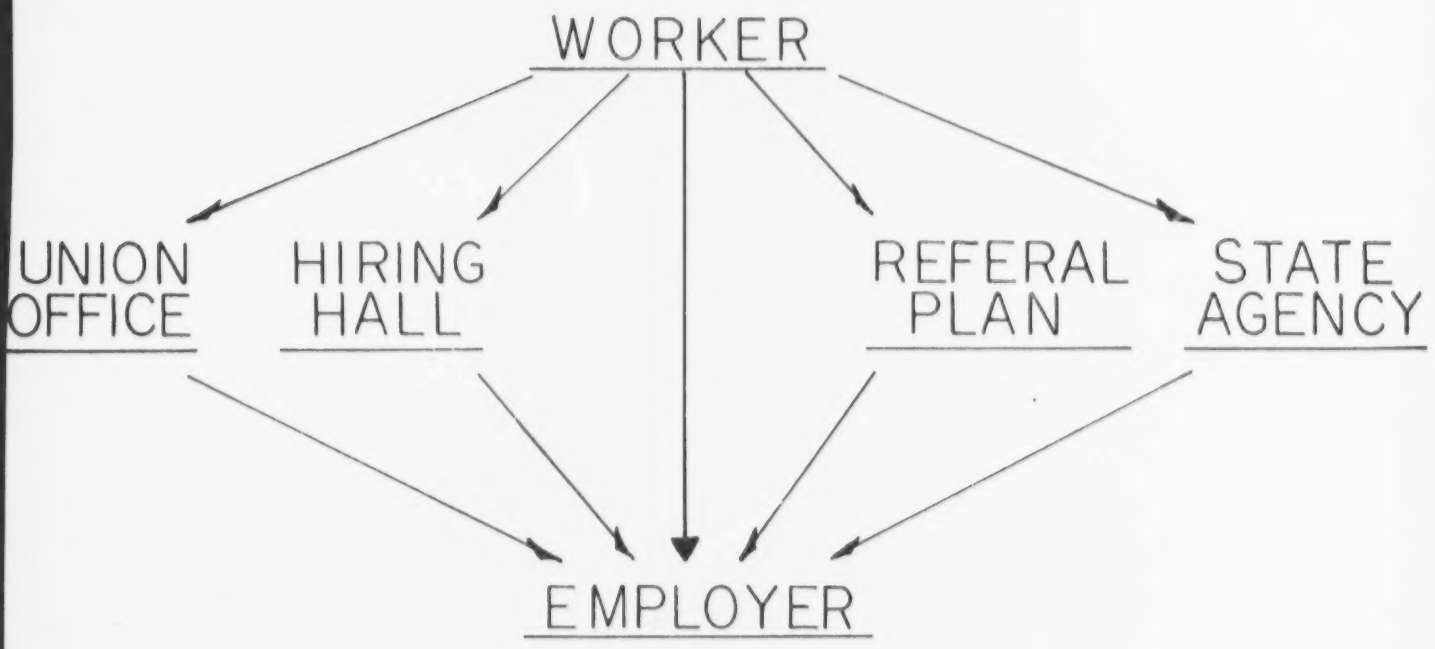
INTERVIEW

PROFICIENCY TESTS

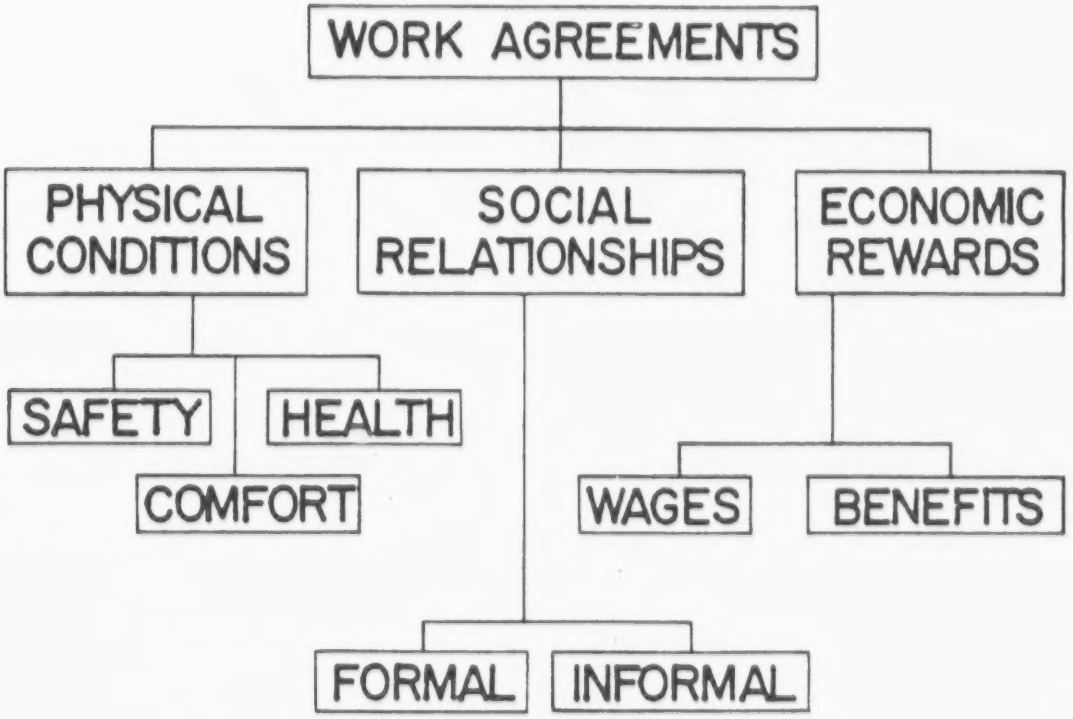
APTITUDE TESTS

CHECKING REFERENCES

SEEKING A JOB



WORKING CONDITIONS



DISAGREEMENTS

CAUSES

RATE OF WAGES

WORKING CONDITIONS

HOURS OF WORK

FRINGE BENEFITS

GRIEVANCE

PROCEDURE

HANDOUT 2

SAMPLE LINE PRODUCTION PERSONNEL ROLES

Personnel	Responsibilities
General Manager	1. Defines this role 2. Supervises all activities 3. Conducts meetings.
Production Manager	1. Defines this role 2. Is responsible for the company production program 3. Makes a flow chart 4. Supervises the industrial engineers and plant engineer.
Industrial Engineer	1. Defines this role 2. Conducts time-motion study 3. Designs a routing chart (i.e., stock transfer system) 4. Supervises construction.
Plant Engineer	1. Defines this role 2. Is in charge of facility 3. Plays a supervisory role 4. Directs a continuous clean-up during production.
Quality Control	1. Defines this role 2. Constructs checking devices 3. Is responsible for a program of inspection to ensure interchangeability of parts.
Industrial Relations Director	1. Defines this role 2. Is in charge of a department 3. Plays a supervisory role.
Personnel Manager	1. Defines this role 2. Hires applicants 3. Participates in company growth.
Public Relations Director	1. Defines this role 2. Greets all visitors 3. Publishes information.
Safety Engineer	1. Defines this role 2. Creates thinking about safety 3. Collects and displays materials.
Training Director	1. Defines this role 2. Directs an education program 3. Provides training for special jobs 4. Invites speakers, secures films, etc.
Research Director	1. Defines this role 2. Forms a research program to meet the needs of the company 3. Coordinates, does not do the task.

HANDOUT 3

CLASS/COMPANY

LINE PRODUCTION REPORT

I. Cover

- A. Title
- B. Company name
- C. Trademark
- D. For whom (course, school, etc.)

II. Preface--Establishes scope of the report (Public Relations Department)

III. Table of Contents (done last)

IV. Personnel Activities

- A. Organizational chart (Industrial Relations Department)
- B. Contract negotiated by the group (Industrial Relations Department)
- C. Role definitions (Individual students holding the jobs)
- D. Forms--job applications, invoices, directives, etc.

V. Production Activities

- A. Introduction--Establishes scope (Public Relations Department)
- B. Working drawings (Design and Drafting Department)
- C. Production flow chart (Production Manager)
- D. Jig drawings and explanations
- E. Progress reports in company meetings--seminars
- F. Cost accounting (Finance Director)
  1. Stock certificates
  2. Cost sheet, profit and loss
  3. Waste factor statement
  4. Dividends declared statement

Handout 3 (continued)

VI. Summation (General Manager)

VII. Bibliography (Training Director)

VIII. Resources--film lists, research found, etc. (Research and Training Directors)

The above is a suggested format only, and is designed to pull the entire activity together at its completion.

HANDOUT 4

OUTLINE FOR ORAL AND WRITTEN OCCUPATIONAL REPORTS

As a company manager you will need to know what your duties and responsibilities are in the class company. If you know about the duties and responsibilities of a person in industry who has your management job, you will have a good idea about what you should do in the class company. So that other members of the class may learn about your management job, you will prepare an oral report about it in the company organization.

The outline that is written below should be used as a guide for preparing your oral report. It should also be used as a guide for preparing a written report about your management job.

In your written report, clearly label each of the sections included in the outline below. You may label the sections by using the Roman numberals and the section titles.

OUTLINE

I. Report Topic--State the industrial occupation about which you are reporting.

II. Department Operations--Describe the duties, activities, responsibilities, and working conditions of a person in industry who has your management job.

III. Occupational Preparation--Tell here the educational entry requirements and beginning salary a person holding this job may earn.

IV. Department Relations--Describe how the duties, activities, and responsibilities of your class company management job are related to other departments in the class company. In your oral report, use the class company personnel chart to show the lines of communication and authority that make it possible for your department and other departments to work together.

V. Qualifications--Report about the special qualifications and knowledge that are needed by a person in industry who has your job.

VI. Sources--List the books, pamphlets, and personal contacts that you have used in collecting information for the report. (Oral Report: Read your list to the class.)

HANDOUT 5

HIGH VOLUME VIRGINIA INDUSTRIES

"Line Production"

Lead Time Activities

ACTIVITY	REVIEW DATE	REVIEW DATE	DUE DATE
Develop a master schedule of activities			
Prepare drawings of different product designs			
Conduct market research			
Select a final design			
Prepare working drawings of final product design			
Construct product prototype			
Establish a financial records system			
Prepare a list of materials			
Determine materials cost			
Determine production cost			
Set selling price for product			
Set scale for wages and salaries			
Determine equipment and processes needed in production			
Prepare requisition and purchasing forms			
Plan plant layout and flow of materials			
Develop the production flow chart			
Construct jigs and fixtures			
Construct material transport systems			
Set up methods and procedures for Quality Control			
Prepare stock certificates			
Sell stocks			
Establish personnel records			
Procure required materials for production			
Organize a system for selling the product			
Hire the production work force			
Make pilot run using production processes			

HANDOUT 6

LABOR DUTIES AND RESPONSIBILITIES

Bench Cleaner

1. Is under the direction of the clean-up supervisor
2. Clears the instructional tables and work benches of materials, paper, and dust
3. Places the chairs on the instruction tables during the sweeping and places them back under the tables once sweeping is completed.

Sweeper

1. Is responsible to the clean-up supervisor
2. Sweeps under and around all tables and machines
3. Cleans an assigned area and assists other sweepers who may not be finished
4. Cleans the brooms at the end of the period
5. Loads all swept materials in the trash can.

Maintenance Person

1. Is under the direction of the clean-up supervisor
2. Cleans all machines and the areas under them
3. Cleans the chalkboard
4. Cleans the sink
5. Empties the trash cans
6. Supplies the laboratory with a quantity of damp saw dust.

Finishing Room Person

1. Is under the direction of the finishing supervisor
2. Is responsible for the condition of all paint containers
3. Stores all flammables
4. Checks students who have used paint brushes to see that they have cleaned them thoroughly.

Tool Person

1. Is under the direction of the tool supervisor
2. Returns all tools to their holders at the end of the period
3. Is responsible for the cleanliness of the tool room
4. Calls the attention of the instructor to dull tools.

Stock Person

1. Is under the direction of the materials supervisor
2. Cleans the balcony (when necessary) and checks the storage of all materials
3. Puts all materials away at the end of the period.

Union

The non-staff members of the class may elect to form an organization to represent them for contract and grievance purposes. They should select a STEWARD who is the union's representative within the plant. The steward would present the union's case at all contract and grievance negotiations.

HANDOUT 7

CONTRACT FOR McCIER AND COMPANY

A Sample Student-Negotiated Contract

Name of Company--McCier and Company
Trade Mark--MAC

ARTICLE I. RECOGNITION:

Section 1. The company hereby recognizes the Union as the official representative of labor in bargaining for rates, wages, hours, conditions of employment, and the right to express grievances at any time, after the contract has been accepted, to the company.

Section 2. The Company will keep the Union notified of all management offices and their holders.

Section3. The management will recognize the Union. Union's Steward is Lisa Chandler.

ARTICLE II. BARGAINING:

Section 1. The Union will keep the company informed of its bargaining representatives.

Section 2. Negotiations concerning provisions in this Agreement shall be executed by two (2) representatives from the union at a time agreeable to both parties and McCier and Company.

ARTICLE III. UNION DUES:

Section 1. The company shall deduct from the regular wage the standard union dues and deliver them to the union, with the employee's name and job title.

Section 2. The company shall and must inform all job holders and all job applicants of the above condition.

Section 3. Union dues are $.50.

ARTICLE IV. INFORMATION ON EMPLOYMENT FURNISHED TO UNION:

Section 1. The company shall furnish the Union with a list of all employees as soon as practicable after the first of each month of the company's existence.

Section 2. The Union shall pay the company $.01 per month for each employee for this information.

ARTICLE V. PROMOTION, TRANSFER, OR DEMOTION OF OFFICERS:

Section 1. The company shall inform the Union of any change in the position of an officer or employee. The Union shall do likewise.

Section 2. Fired employees shall do no work and shall receive an F each day until rehired.

Section 3. Production and Personnel select employee to fill the vacancy.

Handout 7 (continued)

ARTICLE VI. SETTLEMENT OF DISPUTES OR GRIEVANCES:

Section 1. If a grievance or dispute is presented to the Union leader by one or more employees, and it is seen as a case for argument, the steward shall arrange for a meeting with negotiators.

Section 2. Negotiations shall be held by Union and Company officials once a day for every working day of the company's existence.

Section 3. If after five days of negotiations the grievance is still not settled, labor has the right to strike, provided that the majority of the Union want a strike. All participating members of the strike shall not be allowed tool usage of any kind. Anyone who gives aid to a striking member shall receive an "F" for the week.

Section 4 Negotiations shall continue the same as in Section 2 after a strike is in effect. This condition shall continue until a settlement is reached.

Section 5 Management has the right to hire and fire.

Section 6 Grievance shall be expressed at first five (5) minutes of period.

ARTICLE VII. PENSIONS:

Section 1. There shall be pension benefits of $250.00 after 20 years of work for the company. After 25 years of work the employee shall receive a gold watch.

ARTICLE VIII. COUNTY AND SCHOOL LAWS:

Section 1. All county and school laws shall be obeyed by the entire organization during company hours.

PART II

WAGES AND HOURS

ARTICLE I. WAGE

Section 1. The employee who obeys all company rules and does not strike shall receive one A a week during employment. However, employees on strike shall receive no wage whatsoever from the company.

Section 2 If after one month an employee is shown to be a responsible laborer, a wage increase of at least two As a month shall be granted.

Section 3. The basic overtime wage shall be two As for every two hours overtime.

Section 4. Workers will be paid at rate of $5.50 per hour with a $.06 raise every month; workers will also be paid an A for every 5 minutes of clean-up time work.

Section 5. Employees receive two weeks paid vacation with holidays off, and a Christmas bonus of two (2) A s.

Handout 7 (continued)

Section 6. Management receives a wage of $7.40 per hour and all vacations paid.

Section 7. The company will pay half of hospitalization.

ARTICLE II. HOURS:

Section 1. The hours shall be from 9:14 am to 10:01 am. All other time shall be considered overtime and shall be paid for as established in Article I, section 3. (For overtime on holidays see Article II, section 3.)

Section 2. Holidays shall be the same as public school holidays (this includes "snow days"). There will be no given vacations or vacation pay.

Section 3. The basic overtime wage shall be one A per hour of overtime on holidays.

Section 4. Production manager will grade for clean-up time.

Section 5. Employees receive a 10-minute break during work time, not clean-up time.

MANAGEMENT CONTRACT AGREEMENT FOR McCIER AND COMPANY

GENERAL MANAGER _____

PERSONNEL MANAGER _____

LABOR AGREEMENT CONTRACT FOR
McCIER AND COMPANY

LABOR LEADER _____

UNION LOCAL _____

HANDOUT 8

INDUSTRIAL ARTS DEPARTMENT

RESEARCH AND DEVELOPMENT CONTRACT

Article I General

In accordance with the policies and practices of the authorizing corporation, _____ School of the _____ School Division, I, the corporation's agent, do found and confer upon the _____ a contract. This contract is to be limited only by the articles herein attached for the furtherance of research and the development of the recipient's personnel.

Article II Agreements

Let it hereby be known that the Industrial Arts Department, hereafter known as the party of the first part, does authorize the _____, hereafter known as the party of the second part, to pursue this contract as the following conditions shall apply:

1. The party of the first part shall upon completion of the work to be done pay for all materials and labor, a price not to exceed twenty-five dollars.
2. The party of the first part shall attach and stipulate the date of _____, 19___, as a completion date for all work to be performed, and any continuance of this contract shall be only with the agreement of the party of the first part and entirely at the expense of the party of the second part.
3. The party of the second part must display fiscal responsibility and standard accounting practices, subject to audit by the party of the first part.
4. The party of the second part shall demonstrate that the provisions for the development of skill and knowledge on the part of its employees have been effective and in good practice, otherwise the party of the first part reserves the right unto itself to revoke this contract and all subsequent agreements at no cost to the party of the first part.
5. At the completion of all work to be performed, the party of the first part does require the party of the second part to give a written accounting of its activities, to include the following:
   a. A description of the industry in question
   b. A description of the activities of employees (designs, forms, department reports, etc.)
   c. A description of fiscal activities
   d. A summation of the findings of the company.

Article III Labor Practices

Pursuant to the above, if at any time the party of the second part shall be judged by the party of the first part as having used illegal or unfair labor practices against its employees, the party of the first part reserves unto itself the right to revoke this contract and any subsequent agreements.

Article IV Confirmation

Within the framework thus established, as agent for the confirming corporation, the party of the first part, I do award this contract to _____ and unto this I set my seal,

Agent _____

Contracting Company _____

on this the _____ day of the month _____, 19___

HANDOUT 9

INTERNATIONAL BROTHERHOOD OF TRANSPORTATION LABORERS

Sample of Student-Developed Union Rules

ARTICLE I.

Section 1. This organization shall be known as Local Union No. 27 of the International Brotherhood of Transportation Laborers of Falls Church, Virginia. Local Union No. 27 shall have jurisdiction over all inside transportation work.

Section 2. The objects of this Union shall be to promote by proper means the material and intellectual welfare of its members, to care for its sick, burial at death, and to promote a fraternal and friendly feeling among the transportation craft.

ARTICLE II. **MEETINGS**

Section 1. Regular meetings shall be held on the first Friday of each month, at such time and place as the Union may decide.

Section 2. Special meetings may be called only by the Executive Board. No business shall be transacted at such a meeting except that for which it is called.

ARTICLE III.

Section 1. The Executive Board shall consist of the President, Vice President, and Financial Secretary.

WORKING RULES

1. A member applying for or accepting a position as job supervisor shall first secure permission from the business manager.
2. Job supervisors shall make equitable distribution of overtime. Any injustice will be considered a violation of this rule.
3. Workers guilty of or failing to report violations of the agreement may be penalized by the Executive Board.
4. No union members shall be allowed to work on any transportation projects with anyone who is not a member of good standing with the union.
5. The union reserves the right to handle all materials and equipment from the point of delivery on the building site or in the building.
6. Job supervisors shall send a written report of any accidents to the union steward within two hours.
7. Members shall take orders only from the job supervisor.
8. ALL SAFETY RULES SHALL BE FOLLOWED.

PART II

WAGES AND HOURS

ARTICLE I. WAGE:

Section 1. The employee who obeys all company rules and does not strike shall recive one A a week during employment. However, employees on strike shall receive no wage whatsoever from the company.

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MANAGEMENT CONTRACT AGREEMENT FOR
McCIER AND COMPANY

GENERAL MANAGER _____

PERSONNEL MANAGER _____

LABOR AGREEMENT CONTRACT FOR
McCIER AND COMPANY

LABOR LEADER _____

UNION LOCAL _____

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